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**FINAL**  
**SITE INSPECTION PRIORITIZATION REPORT**  
**STAR SAND AND GRAVEL CORPORATION**  
**SMITHTOWN, SUFFOLK COUNTY, NEW YORK**

Volume 2 of 2

**CERCLIS ID No.: NYD981186935**

26 September 1996

**Work Order No.: 04200-022-081-0135**

Prepared for:

**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY**

Prepared by:

**ROY F. WESTON, INC.**  
Raritan Plaza III  
Suite 2B  
101 Fieldcrest Avenue  
Edison, New Jersey 08837

356378



**REFERENCE NO. 25**



## PROJECT NOTE

TO: Project File: StarSand & Gravel Corp. DATE: September 1996  
FROM: Tonya Balla W.O. NO.: 04200-022-081-0135-02  
SUBJECT: Drinking Water Supply

All of the drinking water within 4 miles of the site is ~~served~~ by the Suffolk County Water Authority. This area is termed the Smithtown District - This area contains 20 well fields with a total of 52 wells. Fifteen of the 52 wells are screened in the glacial aquifer. The remaining 37 wells are screened in the Magothy aquifer. The glacial and Magothy aquifers are interconnected and act as a single hydrogeologic unit. All of the water supplied by the 20 well fields is blended. The Smithtown District had 26,197 services as of 31 December 1995. The persons per household for Suffolk County is 3.04. The total population served is 79,612. Population served per well is 1531.



**RECEIVED**  
AUG 26 1996

## SUFFOLK COUNTY WATER AUTHORITY

Edward J. Rosavitch, P.E.  
Executive Director/Chief Engineer  
Waterworks Division

Mailing Address - P.O. Box 38, Oakdale, NY 11769-0901  
(516) 563-0202  
Fax No.: (516) 589-5277

August 22, 1996

Gopa Nair  
Roy F. Weston, Inc.  
Suite 400  
3 Hawthorn Parkway  
Vernon Hills, Illinois 60061-4055

RE: Municipal Water System Information for Smithtown

Dear Sir:

Enclosed, please find map and data for wells and well fields within a four mile radius of the Kings Park sand and gravel mining site. Copies of the distribution system maps are also enclosed herein.

The Suffolk County Water Authority distribution system is entirely interconnected in this area and you can see that there are multiple wells on many sites. The Smithtown District had 26,197 services as of December 31, 1995. No information is available about private well location or use.

If further information is required, please advise.

Very truly yours,

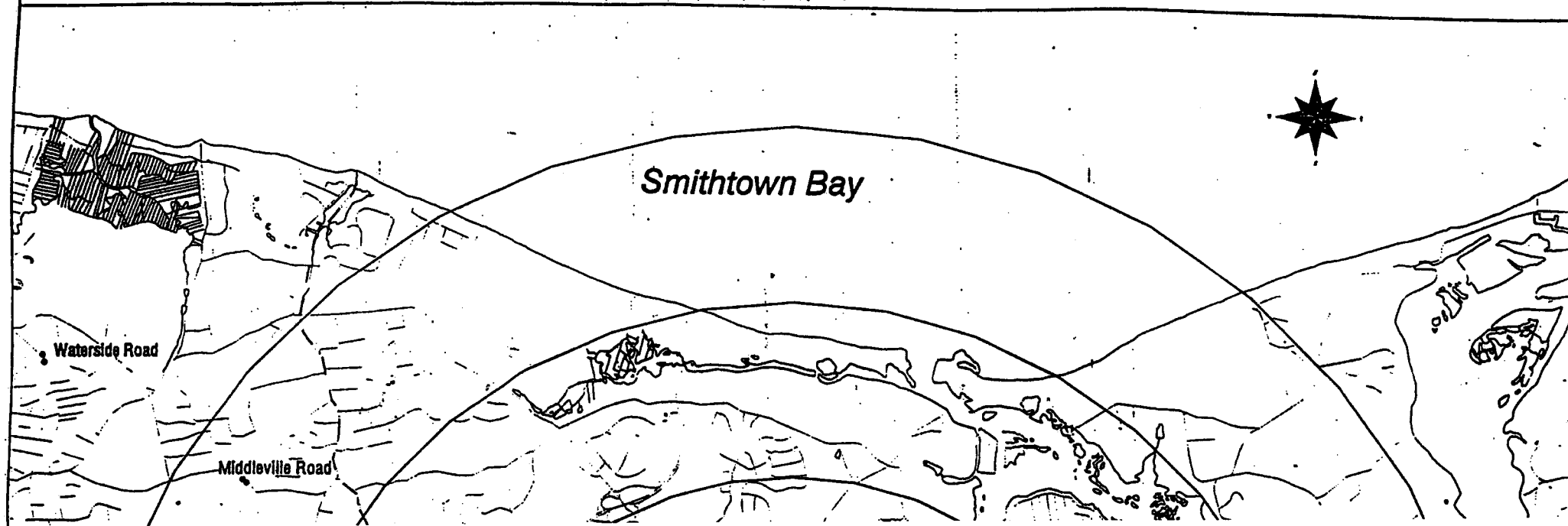
S. R. Dassler,  
Ass't Planning Engineer

SRD:dla

Enclosure



# Wells Within 4 Miles of Kings Park Sandpit



S-NUMBER	WELL NAME
within 1 mile	
S-23186	LAWRENCE RD #1
S-24545	LAWRENCE RD #2
S-34460	LAWRENCE RD #3
S-66758	LAWRENCE RD #4
within 2 miles	
S-40711	ST JOHNLAND RD #1
S-40710	ST JOHNLAND RD #2
S-11891	CORNELL DR #1
S-63966	CORNELL DR #2
S-15923	KINGS PARK RD #1
S-33006	KINGS PARK RD #2
S-53361	KINGS PARK RD #3
S-64062	CARLSON AVE #7
S-13248	CARLSON 4
S-3800	CARLSON 3
S-51	CARLSON 1
S-16129	CARLSON AVE #5
S-27192	CARLSON AVE #6
within 3 miles	
S-1337	NEW YORK 1
S-65	NEW YORK AVE #2
S-11810	NEW YORK AVE #3
S-20689	NEW YORK AVE #4
S-23631	NEW YORK AVE #5
S-42270	NEW MILL RD #1
S-42473	NEW MILL RD #2
S-4184	WALTER CT #1
S-53360	WALTER CT #2
S-9771	BLUE SPRUCE LA #1
S-36791	BLUE SPRUCE LA #2
S-72271	RUTH BLVD #1
S-15514	GUN CLUB RD #1
S-15515	GUN CLUB RD #2
S-25776	GUN CLUB RD #3
within 4 miles	
S-15746	WHEELER RD #1
S-19399	WHEELER RD #2
S-23183	WHEELER RD #3
S-38491	WHEELER RD #4
S-14326	FALCON DR #1
S-44774	FALCON DR #2
S-22471	WICKS RD #1
S-23832	WICKS RD #2
S-36976	WICKS RD #3
S-20369	CAPITOL CT #1
S-58708	CAPITOL CT #2
S-22362	SCHUYLER DR #1
S-23715	SCHUYLER DR #2
S-72245	HALLOCK 1
S-32287	HURTIN BLVD #1
S-34733	HURTIN BLVD #2
S-47673	HURTIN BLVD #3
S-35939	SOUTH SPUR DR #1
S-37351	SOUTH SPUR DR #2
S-53747	SOUTH SPUR DR #3
S-54162	MIDDLEVILLE RD #1
S-88463	MIDDLEVILLE RD #2

Property ID: 93

Station Name: Schuyler Drive Well Field &amp; Pump Station

District: Huntington

Click to Expand  
Station Name

Well No: 2

Structure Type: Underground SubStructure & Prefab  
SuperStructure

Test Boring Ref:

DEC No: S-23715

WSA No: 4757

Decision Date: 9/ 3/64

Pressure Zone: Zone: 11 Kings Park High

## Well Construction

Well Driller: LAUMAN

Well Type: ROTARY

Well Started: 11/15/65

First Test: 3/ 9/65

Final Test: 4/ 1/65

Accepted: 4/ 1/65

Construction Completed: 4/ 9/65

## Miscellaneous Data

Well Dwg No: NP-148-4

Aquifer: GLACIAL

Date in Service: 7/2/65

Active: Yes

Status: PERMANENT

Redevelopment Date:

Normal Cap (gpm): 1,000

Authorized Cap (gpm): 1,000

Max Production (gpm): 1,515

Normal Prod Drawdown (ft): 18.02

Well Depth below Grade (ft): 314.75

Top of Casing to Packer (ft): 234.58

Top of Casing to River (ft):

Top of Casing to Screen (ft): 240

Top/Casing to Bottom Testpipe (ft): 314.75

Casing Diameter (in): 16

Max Prod Drawdown (ft): 27.3

Normal Prod Pumping Level (ft): 135.1

Max Prod Pumping Level (ft): 144.38

Original Specific Capacity

(gpm/ft Drawdown)

**Static Water Level History**

(Ft Below Top of Baseplate)

Measurement

Date

177.08

7/ 2/85

Elevation Top/Casing (MSL): 157

Orig Grade Elevation (MSL): 154.46

**Revision History**

Number:

Revised by:

Date:

Notes:

1

SRD

6/14/91

GAC UNITS IN SERVICE ON WELLS 1 &amp; 2 (5/18/89)

**Screen + Gravel**

Screen Mfr: JOHNSON

Screen Dia (ID) in: 12

Slot Size: 70

Net Length of Bore (ft): 70

Screen Assembly Length (ft): 80

Orig Grade to Top Gravel (ft): 183

Gravel Type: MORIE

Gravel Size: 2&amp;3

Percent Retained (+/- %):

Slave Size:

LIC:

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Property ID:	94	Station Name:	Ruth Boulevard Well Field & Pump Station
District:		Huntington	Click to Search Station Name
Well No:	1		
Structure Type:	Underground Concrete		
Test Boring No:			
DEC No:	S-72271		
WSA No:	7205		
Decision Date:	12/9/81		
Pressure Zone:	Zone: 10 Northport Very High		
<b>Well Construction</b>			
Well Driller:			
Well Type:	ROTARY		
Well Started:			
First Test:			
Final Test:			
Accepted:			
Construction Completed:			
<b>Miscellaneous Data</b>			
Well Dig No:	BHU-3191-20		
Applies:	GLACIAL		
Date In Service:	1/12/84		
Active:	Yes		
Status:	TEMPORARY		
Redevelopment Date:			
Normal Cap (gpm):	1,300		
Authorized Cap (gpm):	1,300		
Max Production (gpm):			
Normal Prod Drawdown (ft):			
Well Depth below Grade (ft):	684		
Top of Casing to Packer (ft):			
Top of Casing to River (ft):			
Top of Casing to Screen (ft):			
Top Casing to Bottom Tailpipe (ft):			
Casing Diameter (in):	20		
Max Prod Drawdown (ft):			
Normal Prod Pumping Level (ft):			
Max Prod Pumping Level (ft):			
Original Specific Capacity (gpm/ft Drawdown):	62		

**Static Water Level History**  
(Ft Below Top of Baseplate)

Measurement

Date

48.14

Elevation Top/Casing (MSL):

Orig Grade Elevation (MSL):

**Screen + Gravel**

Screen #/R:

Screen Dia (ID) in:

Slot Size:

Net Length of Slots (ft):

Screen Assembly Length (ft):

Orig Grade to Top Gravel (ft):

Gravel Type:

Gravel Size:

Percent Retained (+/- %):

Slave Size:

UC:

**Revision History**

Number: Revised by: Date: Notes:


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Property ID: 95

Section Name: Gun Club Road Well Field, Pump Station &amp; Elevated Tank

District: Harrington

Well No: 2

Structure Type: 1-story Masonry

Test Boring No:

GEO No: S-15515

WSA No: 3761

Decision Date: 3/1/60

Pressure Zone: Zone: 10 Northport Very High

## Miscellaneous Data

Well Dwg No: NP-17-13 &amp; XN

Aquifer: MAGOTHY

Date in Service: 5/1/57

Active: Yes

Status: PERMANENT

Redesign Date:

Normal Cap (gpm): 800

Authorized Cap (gpm): 1,500

Max Production (gpm):

Normal Prod Drawdown (ft):

## Well Construction

Well Driller: LAYNE

Well Type: ROTARY

Well Started: 5/28/57

First Test: 7/26/57

Final Test: 8/11/58

Accepted: 8/11/58

Construction Completed: 8/11/58

Well Depth below Grade (ft): 356

Top of Casing to Pecker (ft):

Top of Casing to Riser (ft):

Top of Casing to Screen (ft): 317

Top Casing to Bottom Telephone (ft): 357

Casing Diameter (in): 20

Max Prod Drawdown (ft):

Normal Prod Pumping Level (ft): 244

Max Prod Pumping Level (ft):

Original Specific Capacity  
(gpm/ft Drawdown): 16.9

**Static Water Level History**

(Ft Below Top of Baseplate)

Measurement

Date

162.5

4/11/61

Elevation Top/Casing (MSL):

Orig Grade Elevation (MSL):

**Revision History**

Number:	Revised by:	Date:	Notes:
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**Screen + Gravel**

Screen Mfr: EVERDUR

Screen Dia (ID) in: 12

Slot Size: 40

Net Length of Stem (ft):

Screen Assembly Length (ft):

Orig Grade to Top Gravel (ft):

Gravel Type:

Gravel Size:

Percent Retained (+ / 5%):

Stem Size:

UIC:

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Property ID:	98	Station Name:	Cornell Drive Well Field & Pump Station
District:	Southtown	Class to Ground Station Name:	
Well No:	1	Well Construction	
Structure Type:	1-story Masonry	Well Driller:	LAUMAN
Test Boring No:	NO	Well Type:	DRIVEN
DEC No:	S-11891	Well Started:	6/ 9/54
WSA No:	2483	First Test:	6/ 9/54
Decision Date:	1/26/54	Final Test:	
Pressure Zone:	Zone: 12 Central Island Int	Accepted:	
		Construction Completed:	
Miscellaneous Data		Well Depth below Grade (ft):	118.75
Well Dig No:	SM-870-1	Top of Casing to Packer (ft):	86.25
Aquifer:	GLACIAL	Top of Casing to Floor (ft):	
Date in Service:	1/1/54	Top of Casing to Screen (ft):	87.83
Active:	No	Top Casing to Bottom Tailpipe (ft):	188.75
Status:	RETIRED	Casing Diameter (in):	
Retirement Date:		Max Prod Drawdown (ft):	
Normal Cap (gpm):	750	Normal Prod Pumping Level (ft):	51.75
Authorized Cap (gpm):	1,000	Max Prod Pumping Level (ft):	
Max Production (gpm):		Original Specific Capacity (gpm/ft drawdown):	44
Normal Prod Drawdown (ft):	17		

**Static Water Level History**  
(Ft Below Top of Baseplate)

Measurement

Date

34

6/ 9/54

Elevation Top/Casing (MSL):

Orig Grade Elevation (MSL):

**Screen + Gravel**

Screen Mfg: JOHNSON

Screen Dia (ID) in: 10

Slot Size: 125

Net Length of Slots (ft): 21.67

Screen Assembly Length (ft): 32.5

Orig Grade to Top Gravel (ft):

Gravel Type:

Gravel Size:

Percent Retained (+/- 5%):

Slave Size:

UIC:

**Revision History**

Number: Revised by: Date: Notes:

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Property ID: 99		Station Name: New York Avenue Well Field & Pump Station	
District: Southtown		Well Construction	
Well No: 2		Well Driller: LAUMAN	
Structure Type: SMALL CONC		Well Type: DRIVEN	
Test Boring No:		Well Started:	
DEC No: S-85		First Test:	
WSA No: 479		Final Test:	
Decision Date: 8/14/28		Accepted:	
Pressure Zone: Zone: 12 Central Island Int		Construction Completed: 1/ 1/30	
Miscellaneous Data		Well Depth below Grade (ft): 149.33	
Well Dwg No: SM-8G		Top of Casing to Pecker (ft): 134.75	
Aquifer: GLACIAL		Top of Casing to Filter (ft):	
Date in Service: 1/1/30		Top of Casing to Screen (ft): 134.75	
Active: No		Top/Casing to Bottom Tailpipe (ft): 149.33	
Status: RETIRED		Casing Diameter (in): 10	
Retirement Date:		Max Prod Drawdown (ft):	
Normal Cap (gpm):		Normal Prod Pumping Level (ft):	
Authorized Cap (gpm): 300		Max Prod Pumping Level (ft):	
Max Production (gpm):		Original Specific Capacity (gpm/ft Drawdown):	
Normal Prod Drawdown (ft):			

**Static Water Level History**

(Ft Below Top of Baseplate)

Measurement

Date

Elevation Top/Casing (MSL):

Orig Grade Elevation (MSL):

**Revision History**

Number:

Revised by:

Date:

Notes:

1

SRD

6/14/91

REDEVELOPED 197

**Screen + Gravel**

Screen Mfr: JOHNSON

Screen Dia (ID) in:

Slot Size: 30

Net Length of Slots (ft):

Screen Assembly Length (ft): 20

Orig Grade to Top Gravel (ft):

Gravel Type:

Gravel Size:

Percent Retained (+/- %):

Slave Size:

UC:

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Property ID: 89

Station Name: New York Avenue Well Field &amp; Pump Station

District: Smithtown

Well No: 5

Structure Type: Underground SubStructure & Prefab  
SuperStructure

Test Boring No:

DEC No: 5-23631

WBA No: 4811

Decision Date: 12/ 3/64

Pressure Zone: Zone: 12 Central Island Int

## Miscellaneous Data

Well Dwg No: SM-935-5

Aquifer: MAGOTHY

Date In Service: 5/29/64

Active: Yes

Status: PERMANENT

Retirement Date:

Normal Cap (gpm): 1,200

Authorized Cap (gpm): 1,200

Max Production (gpm): 1,580

Normal Prod Drawdown (ft): 29.7

CHECKED BY  
Station Name

## Well Construction

Well Driller: MATHIES

Well Type: ROTARY

Well Started: 1/ 4/65

First Test: 2/15/65

Final Test: 3/17/65

Accepted: 3/16/65

Construction Completed: 3/24/65

Well Depth below Grade (ft): 585.5

Top of Casing to Pecker (ft): 488.75

Top of Casing to Riser (ft):

Top of Casing to Screen (ft): 493.83

Top/Casing to Bottom Tailpipe (ft): 595.58

Casing Diameter (in): 16

Max Prod Drawdown (ft): 39.11

Normal Prod Pumping Level (ft): 45.78

Max Prod Pumping Level (ft): 56.19

Original Specific Capacity  
(gpm/ft Drawdown): 40.4

Property ID: 100 Station Name: Hurtin Boulevard Well Field, Pump Station & Elevated Tank

District: Southtown

Well No: 2

Structure Type: Underground Concrete

Test Boring No:

DEC No: S-34733

WSA No: 5656

Decision Date: 1/ 3/69

Pressure Zone: Zone: 12 Central Island Int

#### Miscellaneous Data

Well Dwg No: BSM-1276-6

Aquifer: MAGOTHY

Date in Service: 3/6/70

Active: Yes

Status: RETIRED

Retirement Date:

Normal Cap (gpm): 1,200

Authorized Cap (gpm): 1,200

Max Production (gpm): 1,515

Normal Prod Drawdown (ft): 31.67

#### Well Construction

Well Driller: LAUMAN

Well Type: ROTARY

Well Started: 3/10/69

First Test: 6/18/69

Final Test: 7/23/69

Accepted: 7/23/69

Construction Completed: 8/ 1/69

Well Depth below Grade (ft): 421.08

Top of Casing to Footer (ft): 342

Top of Casing to River (ft):

Top of Casing to Screen (ft): 349.67

Top Casing to Bottom Tailpipe (ft): 414

Casing Diameter (in): 20

Max Prod Drawdown (ft): 39.92

Normal Prod Pumping Level (ft): 124.92

Max Prod Pumping Level (ft): 139.25

Original Specific Capacity  
(gpm/ft Drawdown): 37.68

**Static Water Level History**

(Ft Below Top of Baseplate)

Measurement

Date

93.33

10/22/69

Elevation Top/Casing (MSL): 117.76

Orig Grade Elevation (MSL): 124.79

**Revision History**

Number: Revised by: Date: Notes:

**Screen + Gravel**

Screen Mfr: JOHNSON

Screen Dia (ID) in: 12

Slot Size: 60

Net Length of Slots (ft): 60.17

Screen Assembly Length (ft): 72

Orig Grade to Top Gravel (ft): 295

Gravel Type: MORIE

Gravel Size: 2&amp;3

Percent Retained (+/- %): 60

Shave Size:

UC:

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Property ID: 101

Station Name: Wicks Road Well Field, Pump Station &amp; Elevated Tank

District: Southtown

Well No: 2

Structure Type: Underground SubStructure &amp; Prefab SuperStructure

Test Boring No:

DEC No: S-23832

WSA No: 4765

Decision Date: 10/ 1/84

Pressure Zone: Zone: 11 Kings Park High

Click to Search  
Station Name

## Well Construction

Well Owner: LAYNE

Well Type: ROTARY

Well Started: 2/19/65

First Test: 4/12/65

Final Test: 5/ 4/65

Accepted: 5/ 4/65

Construction Completed: 5/17/65

## Miscellaneous Data

Well Dwg No: SM-924-4

Aquifer: MAGOTHY

Date In Service: 9/24/65

Active: Yes

Status: PERMANENT

Retirement Date:

Normal Cap (gpm): 1,200

Authorized Cap (gpm): 1,200

Max Production (gpm): 1,529

Normal Prod Drawdown (ft): 56

Well Depth below Grade (ft): 409

Top of Casing to Packer (ft): 317.08

Top of Casing to River (ft):

Top of Casing to Screen (ft): 321.42

Top/Casing to Bottom Telephone (ft): 409.33

Casing Diameter (in): 16

Max Prod Drawdown (ft): 71.44

Normal Prod Pumping Level (ft): 177.99

Max Prod Pumping Level (ft): 193.36

Original Specific Capacity  
(gpm/ft Drawdown): 21.4



**Static Water Level History**

(Ft Below Top of Baseplate)

Measurement

Date

121.92

9/ 1/65

Elevation Top/Casing (MSL): 167.91

Orig Grade Elevation (MSL): 167.4

**Revision History**

Number:	Revised by:	Date:	Notes:

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**Screen + Gravel**

Screen Mfr: COOK

Screen Dia (ID) in: 10

Slot Size: 70

Net Length of Slots (ft): 70.25

Screen Assembly Length (ft): 92.17

Orig Grade to Top Gravel (ft): 262.25

Gravel Type: MORIE

Gravel Size: 2&amp;3

Percent Retained (+/- %):

Slave Size:

LIC:

Property ID: 102		Station Name: Walter Court Well Field & Pump Station	
District: Smithtown		Well Construction	
Well No: 2		Well Depth: STRATA	
Structure Type: Underground Concrete		Well Type: ROTARY	
Test Boring No:		Well Started: 10/21/74	
DEC No: S-53360		First Test: 12/ 2/74	
WSA No: 6432		Final Test: 2/27/75	
Decision Date: 8/ 1/74		Accepted: 3/ 3/75	
Pressure Zone: Zone: 11 Kings Park High		Construction Completed: 3/21/75	
Miscellaneous Data		Well Depth below Grade (ft): 671.67	
Well Drwg No: BSM-2316-13		Top of Casing to Packler (ft):	
Aquifer: MAGOTHY		Top of Casing to Floor (ft): 463.67	
Date In Service: 4/19/76		Top of Casing to Screen (ft): 539.75	
Active: Yes		Top/Casing to Bottom Tailpipe (ft): 662.67	
Status: PERMANENT		Casing Diameter (in): 20	
Retirement Date:		Max Prod Drawdown (ft): 41.53	
Normal Cap (gpm): 1,400		Normal Prod Pumping Level (ft): 105.08	
Authorized Cap (gpm): 2,400		Max Prod Pumping Level (ft): 128.42	
Max Production (gpm): 3,199		Original Specific Capacity (gpm/ft Drawdown): 76.9	
Normal Prod Drawdown (ft): 18.17			

**Static Water Level History**

(Ft Below Top of Baseplate)

Measurement

Date

86.83

11/19/75

Elevation Top/Casing (MSL): 163.63

Orig Grade Elevation (MSL): 145.6

**Revision History**

Number:	Revised by:	Date:	Notes:

**Screen + Gravel**

Screen Mfr: COOK

Screen Dia (ID) in: 10

Blas Size: 50

Net Length of Blots (ft): 90.67

Screen Assembly Length (ft): 199

Orig Grade to Top Gravel (ft): 480

Gravel Type: MORIE

Gravel Size: 1&amp;2

Percent Retained (+/- %): 75

Slave Size: 16

UC: 1.7

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Property ID: 103		Station Name: Blue Spruce Lane Well Field & Pump Station	
District: Southtown		Well Construction	
Well No: 2A/2B		Well Driller: LAYNE	
Structure Type:		Well Type: ROTARY	
Test Spring No:		Well Started: 3/27/70	
DEC No: S-36791		First Test: 6/3/70	
WDA No: 5795		Final Test: 7/7/70	
Drinker Date: 2/5/70		Accepted: 7/9/70	
Pressure Zone: Zone: 11 Kings Park High		Construction Completed: 7/28/70	
Miscellaneous Data		Well Depth below Grade (ft): 674.33	
Well Drug No: BSM-1494-10		Top of Casing to Parker (ft):	
Aquifer: MAGOTHY		Top of Casing to Filter (ft): 434.08	
Date in Service: 4/22/71		Top of Casing to Screen (ft): 528.08	
Active: Yes		Top Casing to Bottom Tealipe (ft): 667.83	
Status: PERMANENT		Casing Diameter (in): 36	
Retirement Date:		Max Prod Drawdown (ft): 46.08	
Normal Cap (gpm): 2,400		Normal Prod Pumping Level (ft): 129.83	
Authorized Cap (gpm): 2,400		Max Prod Pumping Level (ft): 139.08	
Max Production (gpm): 3,002		Original Specific Capacity (gpm/ft Drawdown): 65.11	
Normal Prod Drawdown (ft): 36.83			

**Static Water Level History**

(Ft Below Top of Baseplate)

Measurement

Date

93

3/ 8/72

Elevation Top/ casing (MSL): 137.52

Orig. Grade Elevation (MSL): 143.68

**Screen + Gravel**

Screen Mfr: JOHNSON

Screen Dia (ID) in: 12

Slot Size: 70

Net Length of Slots (ft): 89.92

Screen Assembly Length (ft): 232.92

Orig. Grade to Top Gravel (ft): 444

Gravel Type: MORIE

Gravel Size: 2&amp;3

Percent Retained (+/- 5%): 76

Slack Size: 12

UC: 17

**Revision History**

Number: Revised by: Date: Notes:

1

SRD

6/14/91

REDEVELOPED 9/15/71 TO 2/10/72

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Property ID: 104		Station Name: Kings Park Road Well Field, Pump Station & Elevated Tank	
District: Smithtown		Well Construction	
Well No: 2		Well Driller: MATHIES	
Structure Type: Underground Concrete		Well Type: ROTARY	
Test Boring No:		Well Started: 5/15/68	
DEC No: 9-33006		First Test: 7/30/68	
WGA No: 5507		Final Test: 8/12/68	
Decision Date: 4/ 4/68		Accepted: 8/12/68	
Pressure Zone: Zone: 11 Kings Park High		Construction Completed: 8/28/68	
Miscellaneous Data			
Well Drwg No: BSM-1011-6		Well Depth below Grade (ft): 502.92	
Aquifer: MAGOTHY		Top of Casing to Packer (ft): 424.08	
Date in Service: 8/12/68		Top of Casing to River (ft):	
Active: Yes		Top of Casing to Screen (ft): 430.17	
Status: PERMANENT		Top/Casing to Bottom Tailpipe (ft): 495.75	
Retirement Date:		Casing Diameter (in): 16	
Normal Cap (gpm): 1,200		Max Prod Drawdown (ft): 26.42	
Authorized Cap (gpm): 1,200		Normal Prod Pumping Level (ft): 119.92	
Max Production (gpm): 1,515		Max Prod Pumping Level (ft): 125.42	
Normal Prod Drawdown (ft): 20.92		Original Specific Capacity (gpm/ft Drawdown): 57.28	

**Static Water Level History**

(Ft Below Top of Baseplate)

Measurement

Date

99

12/9/88

Elevation Top/Casing (MSL): 140.79

Orig Grade Elevation (MSL): 148

**Revision History**

Number:	Revised by:	Date:	Notes:
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**Screen + Gravel**

Screen Mfr: COOK

Screen Dia (ID) in: 10

Blot Size: 70

Net Length of Blot (ft): 59.75

Screen Assembly Length (ft): 71.58

Orig Grade to Top Gravel (ft): 305

Gravel Type: MORIE

Gravel Size: 2&amp;3

Percent Retained (+ / - %): 76

Sieve Size: 65

UC:

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Property ID: 105 Station Name: Carlson Avenue Well Field, Pump Station & Elevated Tank

District: Smithtown

Well No: 4

Structure Type: BACKFILLED

Test Boring No:

DEC No: S-13248

WQA No: 2611

Decision Date: 10/ 5/54

Pressure Zone: Zone: 11 Kings Park High

#### Well Construction

Well Driller: LAUMAN

Well Type: DRIVEN

Well Started: 12/20/54

First Test: 2/23/55

Final Test: 3/ 1/55

Accepted: 3/ 1/55

Construction Completed: 3/ 3/55

#### Miscellaneous Data

Well Dig No: SM-561-5

Aquifer: GLACIAL

Date In Service: 1/1/55

Active: No

Status: RETIRED

Retirement Date:

Normal Cap (gpm): 200

Authorized Cap (gpm): 350

Max Production (gpm):

Normal Prod Drawdown (ft):

Well Depth below Grade (ft): 159.83

Top of Casing to Packer (ft):

Top of Casing to River (ft):

Top of Casing to Screen (ft): 136.17

Top-Casing to Bottom Tailpipe (ft): 159.83

Casing Diameter (in): 12

Max Prod Drawdown (ft):

Normal Prod Pumping Level (ft):

Max Prod Pumping Level (ft):

Original Specific Capacity

(gpm/ft Drawdown):



**Static Water Level History**

(Ft Below Top of Baseplate)

Measurement

Date

Elevation Top/Casing (MSL): 162.14

Orig Grade Elevation (MSL):

**Revision History**

Number: Revised by: Date: Notes:

**Screen + Gravel**

Screen Mfr: JOHNSON

Screen Dia (ID) in:

Blot Size:

Net Length of Blot (ft):

Screen Assembly Length (ft):

Orig Grade to Top Gravel (ft):

Gravel Type:

Gravel Size:

Percent Retained (+/- %):

Slave Size:

UC:

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Property ID: 108

Station Name: Lawrence Road Well Field &amp; Pump Station

District: Smithtown

Well No: 3

Structure Type: Underground Concrete

Test Boring No:

DEC No: S-34460

WDA No: 5582

Decision Date: 9/ 5/68

Pressure Zone: Zone: 11 Kings Park High

Click to expand  
Station Name

## Well Construction

Well Bore: STRATA

Well Type: ROTARY

Well Started: 11/29/68

First Test: 1/30/69

Final Test: 2/19/69

Accepted: 2/19/69

Construction Completed: 3/ 5/69

## Miscellaneous Data

Well Drug No: BSM-1153-7

Aquifer: MAGOTHY

Date In Service: 6/22/69

Active: Yes

Status: PERMANENT

Redrilled Date:

Normal Cap (gpm): 1,200

Authorized Cap (gpm): 1,200

Max Production (gpm): 1,893

Normal Prod Drawdown (ft): 34.67

Well Depth below Grade (ft): 602.25

Top of Casing to Parker (ft): 520.5

Top of Casing to River (ft):

Top of Casing to Screen (ft): 526.25

Top/Casing to Bottom Tealipe (ft): 597.25

Casing Diameter (in): 18

Max Prod Drawdown (ft): 54.67

Normal Prod Pumping Level (ft): 157.17

Max Prod Pumping Level (ft): 177.17

Original Specific Capacity

(gpm/ft Drawdown): 34.59

**Static Water Level History**

(Ft Below Top of Baseplate)

Measurement

Date

122.5

6/ 3/89

Elevation Top/Casing (MSL): 148.04

Orig Grade Elevation (MSL): 153.21

**Revision History**

Number:	Revised by:	Date:	Notes:

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**Screen + Gravel**

Screen Mfr: COOK

Screen Dia (ID) in: 10

Slot Size: 70

Net Length of Slots (ft): 64.83

Screen Assembly Length (ft): 76.75

Orig Grade to Top Gravel (ft): 482

Gravel Type: MORIE

Gravel Size: 2&amp;3

Percent Retained (+/- %): 76

Slave Size: 0.065

UC:

Property ID: 107

Station Name: Wheeler Road Well Field, Pump Station &amp; Booster Station

District: Smythtown

Well No: 2

Structure Type: Underground Concrete

Test Boring No:

DEC No: S-19399

WBA No: 3878

Decision Date: 10/ 4/60

Pressure Zone: Zone: 12 Central Island Int

Cook to Smith  
Station Name

## Well Construction

Well Owner: MATHIES

Well Type: ROTARY

Well Started: 10/28/60

First Test: 11/18/60

Final Test: 11/29/60

Accepted: 11/29/60

Construction Completed: 12/ 1/60

## Miscellaneous Data

Well Dwg No: SM-705-3

Aquifer: GLACIAL

Date in Service: 4/28/61

Active: Yes

Status: PERMANENT

Retirement Date:

Normal Cap (gpm): 840

Authorized Cap (gpm): 1,000

Max Production (gpm): 1,539

Normal Prod Drawdown (ft): 9.82

Well Depth below Grade (ft): 131.42

Top of Casing to Packer (ft): 79.17

Top of Casing to Filter (ft):

Top of Casing to Screen (ft): 82.08

Top Casing to Bottom Teelpipe (ft): 125.42

Casing Diameter (in): 16

Max Prod Drawdown (ft): 18.7

Normal Prod Pumping Level (ft): 34.03

Max Prod Pumping Level (ft): 42.91

Original Specific Capacity

(gpm/ft Drawdown): 95.5

**Static Water Level History**  
(Ft Below Top of Baseplate)

Measurement

24.17

Date

3/ 6/81

Elevation Top/Casing (MSL): 63.34

Orig Grade Elevation (MSL): 69.62

**Revision History**

Number: Revised by: Date: Notes:

Number	Revised by	Date	Notes

**Screen + Gravel**

Screen Mfr: JOHNSON

Screen Dia (ID) in: 12

Slot Size: 80

Net Length of Slots (ft): 40.17

Screen Assembly Length (ft): 46.25

Orig Grade to Top Gravel (ft): 60

Gravel Type: MORIE

Gravel Size: 3&4

Percent Retained (+/- %):

Slave Size:

UC:

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Property ID: 1110

Station Name: Falcon Drive Well Field &amp; Pump Station

District: Southtown

Well No: 2A/2B

Structure Type: Underground Concrete

Year Boring No:

DEC No: S-44774

WGA No: 6048

Decision Date: 12/16/71

Pressure Zone: Zone: 12 Central Island Int

Check to ensure  
Sealant Name

## Well Construction

Well Driller: STRATA

Well Type: ROTARY

Well Started: 8/15/72

First Test: 9/12/72

Final Test: 9/20/78

Accepted: 10/4/72

Construction Completed: 10/16/72

## Miscellaneous Data

Well Dwg No: BSM-1827-12

Aquifer: MAGOTHY

Date in Service: 8/9/73

Active: Yes

Status: PERMANENT

Retirement Date:

Normal Cap (gpm): 2,400

Authorized Cap (gpm): 2,400

Max Production (gpm): 3,024

Normal Prod Drawdown (ft): 66.42

Well Depth below Grade (ft): 283.58

Top of Casing to Packer (ft): 185.83

Top of Casing to Riser (ft):

Top of Casing to Screen (ft): 185.75

Top/Casing to Bottom Tailpipe (ft): 287.08

Casing Diameter (in): 16

Max Prod Drawdown (ft): 83.75

Normal Prod Pumping Level (ft): 95.17

Max Prod Pumping Level (ft): 102.5

Original Specific Capacity

(gpm/ft Drawdown): 41.4

**Static Water Level History**

(Ft Below Top of Baseplate)

Measurement

Date

18.67

5/16/73

Elevation Top/Casing (MSL): 65.07

Orig Grade Elevation (MSL): 73.21

**Revision History**

Number:	Revised by:	Date:	Notes:

**Screen + Gravel**

Screen Mfr: JOHNSON

Screen Dia (ID) In: 12

Slot Size: 55

Net Length of Slots (ft): 90.08

Screen Assembly Length (ft): 101.33

Orig Grade to Top Gravel (ft): 148

Gravel Type: MORIE

Gravel Size: 2&amp;3

Percent Retained (+ / - %): 71

Slime Size:

UC: 1.7

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Property ID: 111

Station Name: Capitol Court Well Field &amp; Pump Station

District: Southtown

Well No: 2

Structure Type: Underground Concrete

Test Boring No:

DEC No: S-58708

WSA No: 6652

Decision Date: 5/ 5/76

Pressure Zone: Zone: 12 Central Island Int

Casing to Ground  
Casing Number

## Well Construction

Well Driller: STRATA

Well Type: ROTARY

Well Started: 6/ 4/76

First Test: 7/29/76

Final Test: 9/28/76

Accepted: 9/30/76

Construction Completed: 9/30/76

## Miscellaneous Data

Well Desc No: BSM-2666-22

Aquifer: MAGOTHY

Date in Service: 5/8/76

Active: Yes

Status: PERMANENT

Retirement Date:

Normal Cap (gpm): 1,300

Authorized Cap (gpm): 1,300

Max Production (gpm): 1,641

Normal Prod Drawdown (ft): 25.92

Well Depth below Grade (ft): 423.92

Top of Casing to Packer (ft):

Top of Casing to Riser (ft): 250.87

Top of Casing to Screen (ft): 320.83

Top/Casing to Bottom Teelpipe (ft): 415.75

Casing Diameter (in): 20

Max Prod Drawdown (ft): 32.75

Normal Prod Pumping Level (ft): 102.75

Max Prod Pumping Level (ft): 109.58

Original Specific Capacity  
(gpm/ft Drawdown): 50.1



**Static Water Level History**  
(Ft Below Top of Baseplate)

Measurement:

76.83

Date:

8/ 3/77

Elevation Top/Casing (MSL): 123.62

Orig Grade Elevation (MSL): 131.8

**Screen + Gravel**

Screen Mfr: COOK

Screen Dia (ID) in: 10

Slot Size: 50

Net Length of Hole (ft): 60.25

Screen Assembly Length (ft): 165.08

Orig Grade to Top Gravel (ft): 265

Gravel Type: MORIE

Gravel Size: 1&2

Percent Retained (+ / - %): 75

Stone Size: 16

UC: 1.7

**Revision History**

Number: Revised By: Date: Notes:


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Property ID: 167

Station Name: Larkfield Road Well Field &amp; Pump Station

SOUTH SPVA

District: Huntington

Well No: 2

Structure Type: Underground Concrete

Test Boring No:

DEC No: S-27351

WSA No: 5741

Decision Date: 9/4/89

Pressure Zone: Zone: 10 Northport Very High

## Miscellaneous Data

Well Desc No: BNP-1571-7

Age/Year: MAGOTHY

Date in Service: 5/29/70

Active: Yes

Status: OUT OF SERVICE

Retirement Date:

Normal Cap (gpm): 1,200

Authorized Cap (gpm): 1,200

Max Production (gpm): 1,543

Normal Prod Drawdown (ft): 39.17

## Well Construction

Well Driller: STRATA

Well Type: ROTARY

Well Started: 5/19/70

First Test: 6/25/70

Final Test: 7/16/70

Accepted: 7/16/70

Construction Completed: 7/20/70

Well Depth below Grade (ft): 663

Top of Casing to Packer (ft):

Top of Casing to Blower (ft): 444.83

Top of Casing to Screen (ft): 507.83

Top/Casing to Bottom Teelpipe (ft): 608.25

Casing Diameter (in): 20

Max Prod Drawdown (ft): 50.33

Normal Prod Pumping Level (ft): 155.83

Max Prod Pumping Level (ft): 167.08

Original Specific Capacity  
(gpm/ft Drawdown): 30.62

**Static Water Level History**

(Ft Below Top of Baseplate)

Measurement

Date

116.67

5/ 6/71

Elevation Top/Casing (MSL): 164.56

Orig Grade Elevation (MSL): 171.58

**Revision History**

Number: Revised by: Date: Notes:

1

SRD

6/14/91

WELL NO. 2 OUT OF SERVICE 9/7/89 - NO. 3

**Screen + Gravel**

Screen MB: COOK

Screen Dia (ID) in: 10

Slot Size: 60

Net Length of Stem (ft): 156.33

Screen Assembly Length (ft): 93.33

Orig Grade to Top Gravel (ft): 456

Gravel Type: MORIE

Gravel Size: 2&amp;3

Percent Retained (+/- %): 60

Gravel Size: 12

UC: 1.7

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Property ID: 188

Station Name: St. Johnland Road Well Field &amp; Pump Station

District: Grafton

Well No: 2

Structure Type: Underground Concrete

Test Boring No:

DEC No: S-40710

WSA No: 5928

Decision Date: 6/20/72

Pressure Zone: Zone: 11 Kings Park High

CSM to be used  
Casing Material

## Well Construction

Well Driller: LAYNE

Well Type: ROTARY

Well Started: 9/14/71

First Test: 10/20/71

Final Test: 10/28/71

Accepted: 10/30/71

Construction Completed: 1/ 6/71

## Miscellaneous Data

Well Dwg No: BSM-1692-27

Aquifer: MAGOTHY

Date in Service: 6/20/72

Active: Yes

Status: PERMANENT

Retirement Date:

Normal Cap (gpm): 1,200

Authorized Cap (gpm): 1,200

Max Production (gpm): 3,368

Normal Prod Drawdown (ft): 8.5

Well Depth below Grade (ft): 463.42

Top of Casing to Packer (ft):

Top of Casing to River (ft): 285.83

Top of Casing to Screen (ft): 360.58

Top Casing to Bottom Teelpipe (ft): 457.08

Casing Diameter (in): 20

Max Prod Drawdown (ft): 23.83

Normal Prod Pumping Level (ft): 38.25

Max Prod Pumping Level (ft): 51.58

Original Specific Capacity

(gpm/ft Drawdown): 141.2

**Static Water Level History**

(Ft Below Top of Baseplate)

Measurement

Date

27.75

4/ 3/72

Elevation Top/Casing (MSL): 57.42

Orig Grade Elevation (MSL): 63.81

**Revision History**

Number	Revised By:	Date:	Notes:

**Screen + Gravel**

Screen MR: COOK

Screen Dia (ID) in: 10

Slot Size: 70

Net Length of Slots (ft): 90.58

Screen Assembly Length (ft): 171.25

Orig Grade to Top Gravel (ft): 293

Gravel Type: MORIE

Gravel Size: 2&amp;3

Percent Retained (+ / - %): 76

Slave Size: 66

UC: 1.7

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Property ID: 187		Station Name: New Mill Road Well Field & Pump Station	
District: Smithtown		Well Construction	
Well No: 2	Well Driller: LAUMAN		
Structure Type: Underground Concrete	Well Type: ROTARY		
Test Spring No:	Well Started: 12/15/72		
DEC No: S-42473	First Test: 1/27/72		
WSA No: 6030	Final Test: 2/ 8/72		
Decision Date: 11/23/71	Accepted: 2/10/72		
Pressure Zone: Zone: 12 Central Island Int	Construction Completed: 2/16/72		
Miscellaneous Data		Well Depth below Grade (ft): 648.33	
Well Dig No: BSM-1868-23	Top of Casing to Parker (ft):		
Aquifer: MAGOTHY	Top of Casing to Riser (ft): 487.08		
Date in Service: 2/8/72	Top of Casing to Screen (ft): 567		
Active: Yes	Top/Casing to Bottom Tailpipe (ft): 641.08		
Status: PERMANENT	Casing Diameter (in): 20		
Relinquishment Date:	Max Prod Drawdown (ft):		
Normal Cap (gpm): 1,400	Normal Prod Pumping Level (ft):		
Authorized Cap (gpm): 1,400	Max Prod Pumping Level (ft):		
Max Production (gpm):	Original Specific Capacity 33.8		
Normal Prod Drawdown (ft):	(gpm/ft Drawdown):		

**Static Water Level History**

(Ft Below Top of Baseplate)

Measurement

Date

36.92

6/ 9/72

Elevation Top/Casing (MSL): 60.77

Orig Grade Elevation (MSL): 68

**Screen + Gravel**

Screen Mfr: JOHNSON

Screen Dia (ID) in: 12

Slot Size: 70

Net Length of Slots (ft): 70.08

Screen Assembly Length (ft): 154

Orig Grade to Top Gravel (ft): 499

Gravel Type: MORIE

Gravel Size: 2&amp;3

Percent Retained (+/- %): 76

Slave Size: 65

UC: 1.7

**Revision History**

Number:	Revised by:	Date:	Notes:
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Property ID: 189 Station Name: Middleville Road Well Field, Pump Station & 2,290,000-Gallon Standpipe

District: Huntington

Well No: 2

Structure Type: Underground Concrete

Test Boring No:

DEC No: S-88463

WSA No: 7770

Decision Date: 10/15/88

Pressure Zone: Zone: 09 Northport Int

Click to Search  
Station Name

#### Well Construction

Well Owner: LAUMAN

Well Type: ROTARY

Well Started: 1/3/75

First Test: 3/6/75

Final Test: 3/18/75

Accepted: 3/20/75

Construction Completed: 4/4/75

#### Miscellaneous Data

Well Dwg No: BHU 1908-21

Aquifer: GLACIAL

Date in Service: 3/17/88

Active: Yes

Status: PERMANENT

Retirement Date:

Normal Cap (gpm): 1,400

Authorized Cap (gpm): 1,400

Max Production (gpm): 1,739

Normal Prod Drawdown (ft): 14.83

Well Depth below Grade (ft): 543.58

Top of Casing to Packer (ft):

Top of Casing to Riser (ft): 392.83

Top of Casing to Screen (ft): 482.75

Top/Casing to Bottom Tailpipe (ft): 536.42

Casing Diameter (in): 20

Max Prod Drawdown (ft): 23.5

Normal Prod Pumping Level (ft): 139.5

Max Prod Pumping Level (ft): 148.17

Original Specific Capacity

(gpm/ft Drawdown): 73.9



**Static Water Level History**

(Ft Below Top of Baseplate)

Measurement

Date

124.67

12/ 5/75

Elevation Top/ casing (MSL): 152.87

Orig Grade Elevation (MSL): 160

**Revision History**

Number:	Revised by:	Date:	Notes:
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**Screen + Gravel**

Screen Mfr: JOHNSON

Screen Dia (ID) in: 10

Slot Size: 80

Net Length of Screen (ft): 69.83

Screen Assembly Length (ft): 143.58

Orig Grade to Top Gravel (ft): 404

Gravel Type: MORIE

Gravel Size: 2&amp;3

Percent Retained (+/- %): 71

Slave Size: 10

UC: 1.7

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Property ID: 223		Station Name: Hallock Avenue Well Field & Pump Station	
District: Smithtown		<div>Click to Search</div> <div>Station Name</div>	
Well No:	1	Well Construction	
Structure Type:	Underground Concrete	Well Driller:	
Test Boring No:	S-31711T	Well Type:	ROTARY
DEC No:	S-72245	Well Started:	
WBA No:	7189	First Test:	
Decision Date:	10/26/81	Final Test:	
Pressure Zone:	Zone: 12 Central Island Int	Accepted:	
		Construction Completed:	
Miscellaneous Data		Well Depth below Grade (ft):	525
Well Dwg No:	BSM-3174-19	Top of Casing to Packer (ft):	
Aquifer:	MAGOTHY	Top of Casing to Riser (ft):	
Date in Service:	8/24/82	Top of Casing to Screen (ft):	
Active:	Yes	Top of Casing to Bottom Tailpipe (ft):	
Status:	TEMPORARY PERMANENT	Casing Diameter (in):	20
Retirement Date:		Max Prod Drawdown (ft):	
Normal Cap (gpm):	1,250	Normal Prod Pumping Level (ft):	
Authorized Cap (gpm):	1,300	Max Prod Pumping Level (ft):	
Max Production (gpm):		Original Specific Capacity	30.5
Normal Prod Drawdown (ft):		(gpm/ft Drawdown):	

Property ID: 93

Station Name: Schuyler Drive Well Field &amp; Pump Station

District: Huntington

Well No: 1

Structure Type: Underground SubStructure &amp; Prefab SuperStructure

Test Boring No:

DEO No: S-22362

WCA No: 4497

Decision Date: 10/ 3/63

Pressure Zone: Zone: 11 Kings Park High

Click to Search  
Station Name

## Well Construction

Well Driller: LAYNE

Well Type: ROTARY

Well Started: 11/12/64

First Test: 5/ 8/64

Final Test: 5/26/64

Accepted: 5/26/64

Construction Completed: 6/ 1/64

## Miscellaneous Data

Well Dwg No: NP-111-26

Aquifer: GLACIAL

Date In Service: 5/26/64

Active: Yes

Status: PERMANENT

Redesign Date:

Normal Cap (gpm): 820

Authorized Cap (gpm): 1,000

Max Production (gpm): 1,627

Normal Prod Drawdown (ft): 25.95

Well Depth below Grade (ft): 313.92

Top of Casing to Packer (ft): 239.42

Top of Casing to River (ft):

Top of Casing to Screen (ft): 243.5

Top/Casing to Bottom Tailpipe (ft): 316.42

Casing Diameter (in): 16

Max Prod Drawdown (ft): 51.49

Normal Prod Pumping Level (ft): 135.51

Max Prod Pumping Level (ft): 161.05

Original Specific Capacity

(gpm/ft Drawdown): 31.6

Property ID:	95	Station Name:	Gun Club Road Well Field, Pump Station & Elevated Tank
Division:	Huntington	Click to Search	
Well No:	3	Well Construction	
Structure Type:	Underground SubStructure & Prefab SuperStructure	Well Driller:	LAYNE
Test Soring No:		Well Type:	ROTARY
DEC No:	S-25776	Well Started:	8/26/65
WSA No:	4959	First Test:	10/28/65
Decision Date:	7/22/65	Final Test:	11/5/65
Pressure Zone:	Zone: 10 Northport Very High	Accepted:	11/5/65
		Construction Completed:	11/22/65
Miscellaneous Data		Well Depth below Grade (ft):	605
Well Desig No:	BNP-561-5	Top of Casing to Packer (ft):	516.75
Aquifer:	MAGOTHY	Top of Casing to Riser (ft):	
Date in Service:	5/28/66	Top of Casing to Screen (ft):	296
Active:	Yes	Top/Casing to Bottom: Tailpipe (ft):	588.67
Status:	PERMANENT	Casing Diameter (in):	20
Retirement Date:		Max Prod Drawdown (ft):	20.08
Normal Cap (gpm):	1,200	Normal Prod Pumping Level (ft):	185.62
Authorized Cap (gpm):	1,200	Max Prod Pumping Level (ft):	192.04
Max Production (gpm):	1,739	Original Specific Capacity (gpm/ft Drawdown):	86.6
Normal Prod Drawdown (ft):	13.86		

Property ID: 38

Station Name: Cornell Drive Well Field &amp; Pump Station

District: Smithtown

Well No: 2

Structure Type: Underground Concrete

Test Spring No:

DEC No: S-63986

WSA No: 6758

Decision Date: 5/23/77

Pressure Zone: Zone: 12 Central Island Int

Click to Search  
Station Name

## Well Construction

Well Driller: DELTA

Well Type: ROTARY

Well Started: 5/ 5/78

First Test: 8/14/78

Final Test: 8/15/78

Accepted: 8/17/78

Construction Completed: 9/20/78

## Miscellaneous Data

Well Dwg No: BSM-2819-11

Aquifer: MAGOTHY

Date In Service: 7/3/80

Active: Yes

Status: PERMANENT

Retirement Date:

Normal Cap (gpm): 1,300

Authorized Cap (gpm): 2,400

Max Production (gpm): 3,002

Normal Prod Drawdown (ft): 20.58

Well Depth below Grade (ft): 654.67

Top of Casing to Pecker (ft):

Top of Casing to River (ft): 473.42

Top of Casing to Screen (ft): 549.58

Top/Casing to Bottom Tailpipe (ft): 643.92

Casing Diameter (in): 20

Max Prod Drawdown (ft): 47.5

Normal Prod Pumping Level (ft): 44.08

Max Prod Pumping Level (ft): 71.08

Original Specific Capacity

(gpm/ft Drawdown): 63.1

Property ID: 99

Station Name: New York Avenue Well Field &amp; Pump Station

District: Southtown

Well No: 3

Structure Type: Underground Concrete

Test Boring No:

DEO No: S-11810

WGA No: 2372

Decision Date: 6/3/53

Pressure Zone: Zone: 12 Central Island Int

Click to Search  
Station Name

## Well Construction

Well Driller: LAUMAN

Well Type: DRIVEN

Well Started: 10/7/53

First Test: 12/5/53

Final Test: 1/6/54

Accepted: 1/6/54

Construction Completed: 1/9/54

## Miscellaneous Data

Well Dwg No: SM-556-B

Aquifer: GLACIAL

Date in Service: 6/18/54

Active: Yes

Status: PERMANENT

Retirement Date:

Normal Cap (gpm): 450

Authorized Cap (gpm): 450

Max Production (gpm): 480

Normal Prod Drawdown (ft): 59

Well Depth below Grade (ft): 164

Top of Casing to Packer (ft): 132.58

Top of Casing to Filter (ft):

Top of Casing to Screen (ft): 133.58

Top Casing to Bottom Teelpipe (ft): 162.83

Casing Diameter (in): 12

Max Prod Drawdown (ft): 74

Normal Prod Pumping Level (ft): 80.08

Max Prod Pumping Level (ft):

Original Specific Capacity

(gpm/ft Drawdown): 6.5



**Static Water Level History**

(Ft Below Top of Baseplate)

Measurement

Date

6.08

5/26/54

Elevation Top/Casing (MSL)

Orig Grade Elevation (MSL)

**Revision History**

Number: Revised by: Date: Notes:

1

SRD

6/14/91

REDEVELOPED 197 6" AQUA STREAM LINER INSTALLED  
1990**Screen + Gravel**

Screen Mfr: JOHNSON

Screen Dia (RD) in: 10

Slot Size: 30

Net Length of Slots (ft): 25

Screen Assembly Length (ft): 30.25

Orig Grade to Top Gravel (ft):

Gravel Type:

Gravel Size:

Percent Retained (+/- %):

Slave Size:

UC:

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Property ID:	100	Station Name:	Hurtin Boulevard Well Field, Pump Station & Elevated Tank
District:	Southtown	Click to view Station Name	
Well No:	1		
Structure Type:	1-story Masonry		
Test Spring No:	S-31711T		
DEC No:	S-32287		
WSA No:	5473		
Decision Date:	1/ 4/68		
Pressure Zone:	Zone: 12 Central Island Int		
<b>Well Construction</b>			
Well Owner:	LAUMAN		
Well Type:	ROTARY		
Well Started:	1/11/68		
First Test:	3/14/68		
Final Test:	3/26/68		
Accepted:	3/26/68		
Construction Completed:	4/ 8/68		
<b>Miscellaneous Data</b>			
Well Dwg No:	BSM-1010-21	Well Depth below Grade (ft):	289.75
Aquifer:	MAGOTHY	Top of Casing to Packer (ft):	220.17
Date In Service:	4/25/69	Top of Casing to Rise (ft):	
Author:	Yes	Top of Casing to Screen (ft):	225.83
Status:	PERMANENT	Top/Casing to Bottom Teelpipe (ft):	290.42
Retirement Date:		Casing Diameter (in):	20
Normal Cap (gpm):	1,200	Max Prod Drawdown (ft):	12.18
Authorized Cap (gpm):	1,200	Normal Prod Pumping Level (ft):	112
Max Production (gpm):	1,529	Max Prod Pumping Level (ft):	114.58
Normal Prod Drawdown (ft):	9.56	Original Specific Capacity (gpm/ft Drawdown):	125.5



**Static Water Level History**

(Ft Below Top of Baseplate)

Measurement

Date

102.42

11/29/68

Elevation Top/Casing (MSL): 125.42

Orig Grade Elevation (MSL): 124.76

**Revision History**

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**Screen + Gravel**

Screen Mfr: JOHNSON

Screen Dia (ID) in: 12

Slot Size: 80

Net Length of Screen (ft): 60

Screen Assembly Length (ft): 70.33

Orig Grade to Top Gravel (ft): 178

Gravel Type: MORIE

Gravel Size: 2&amp;3

Percent Retained (+/- %): 70

Screen Size:

UC:

Property ID: 101

Station Name: Wicks Road Well Field, Pump Station &amp; Elevated Tank

District: Southtown

Well No: 3

Structure Type: Underground Concrete

Year Boring No:

DEC No: S-36976

WGA No: 5803

Decision Date: 3/ 4/70

Pressure Zone: Zone: 11 Kings Park High

Click to Search  
Station Name

## Well Construction

Well Driller: STRATA

Well Type: ROTARY

Well Started: 3/27/70

First Test: 5/ 8/70

Final Test: 5/18/70

Accepted: 5/18/70

Construction Completed: 5/27/70

## Miscellaneous Data

Well Dig No: BSM-1532-7

Aquifer: MAGOTHY

Date in Service: 10/5/70

Active: Yes

Status: PERMANENT

Retirement Date:

Normal Cap (gpm): 1,200

Authorized Cap (gpm): 1,200

Max Production (gpm): 1,711

Normal Prod Drawdown (ft): 35.58

Well Depth below Grade (ft): 418.5

Top of Casing to Packler (ft):

Top of Casing to Filter (ft): 285.42

Top of Casing to Screen (ft): 330.42

Top Casing to Bottom Teelpipe (ft): 417.08

Casing Diameter (in): 20

Max Prod Drawdown (ft): 50.75

Normal Prod Pumping Level (ft): 144.92

Max Prod Pumping Level (ft): 160.08

Original Specific Capacity

(gpm/ft Drawdown): 33.7

**Static Water Level History**

(Ft Below Top of Baseplate)

Measurement

Date

109.33

6/18/70

Elevation Top/Casing (MSL): 160.42

Orig Grade Elevation (MSL): 161.78

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**Screen + Gravel**

Screen Mfr: JOHNSON

Screen Dia (ID) in: 10

Slot Size: 60

Net Length of Slots (ft): 64.92

Screen Assembly Length (ft): 151.67

Orig Grade to Top Gravel (ft): 268

Gravel Type: MORIE

Gravel Size: 2&amp;3

Percent Retained (+/- %): 60

Slave Size: 0.065

UC:

Property ID: 102

Station Name: Walter Court Well Field &amp; Pump Station

District: Smithtown

Well No: 1

Structure Type: 1-story Masonry

Test Boring No:

DEC No: S-4184

WBA No: 2499

Decision Date: 3/ 2/54

Pressure Zone: Zone: 11 Kings Park High

Click to Search  
Station Name

## Well Construction

Well Driller: LAUMAN

Well Type: DRIVEN

Well Started: 5/16/45

First Test:

Final Test:

Accepted:

Construction Completed: 6/23/45

## Miscellaneous Data

Well Dwg No: SM-950-2

Aquifer:

Date in Service: 1/1/50

Arche:

Status: RETIRED

Retirement Date: 6/ 6/91

Normal Cap (gpm): 700

Authorized Cap (gpm): 1,000

Max Production (gpm):

Normal Prod Drawdown (ft): 22.75

Well Depth below Grade (ft): 165.25

Top of Casing to Parker (ft): 139.58

Top of Casing to River (ft):

Top of Casing to Screen (ft): 139

Top Casing to Bottom Teelpipe (ft): 165.25

Casing Diameter (in):

Max Prod Drawdown (ft):

Normal Prod Pumping Level (ft): 124.75

Max Prod Pumping Level (ft):

Original Specific Capacity

(gpm/ft Drawdown): 30.87

Property ID: 103		Station Name: Blue Spruce Lane Well Field & Pump Station	
District: Smythtown		<a href="#">Click to Search Station Name</a>	
Well No:	1	<b>Well Construction</b>	
Structure Type:		Well Driller:	
Test Boring No:	NO	Well Type:	DRIVEN
DEC No:	S-9771	Well Started:	
WBA No:	2499	First Test:	
Decision Date:	3/ 2/54	Final Test:	
Pressure Zone:	Zone: 11 Kings Park High	Accepted:	
		Construction Completed:	
<b>Miscellaneous Data</b>		Well Depth below Grade (ft):	153
Well Dwg No:	XIH-12G	Top of Casing to Packer (ft):	
Aquifer:		Top of Casing to Riser (ft):	
Date in Service:	1/1/54	Top of Casing to Screen (ft):	
Active:	No	Top Casing to Bottom Tailpipe (ft):	
Status:	RETIRED	Casing Diameter (in):	
Retirement Date:		Max Prod Drawdown (ft):	
Normal Cap (gpm):	1,000	Normal Prod Pumping Level (ft):	
Authorized Cap (gpm):	1,000	Max Prod Pumping Level (ft):	
Max Production (gpm):		Original Specific Capacity (gpm/ft Drawdown):	
Normal Prod Drawdown (ft):			

Property ID: 104 Station Name: Kings Park Road Well Field, Pump Station & Elevated Tank

District: Southdown

Well No: 3

Structure Type: Underground Concrete

Test Boring No:

DEC No: S-53361

WSA No: 6441

Decision Date: 8/ 1/74

Pressure Zone: Zone: 11 Kings Park High

Cast to Ground  
Station Name

#### Well Construction

Well Driller: DELTA

Well Type: ROTARY

Well Started: 10/ 8/74

First Test: 3/24/75

Final Test: 4/17/75

Accepted: 4/21/75

Construction Completed: 5/ 6/75

#### Miscellaneous Data

Well Dwg No: BSM-2293-7

Aquifer: MAGOTHY

Date in Service: 3/16/76

Active: Yes

Status: PERMANENT

Retirement Date:

Normal Cap (gpm): 1,300

Authorized Cap (gpm): 2,400

Max Production (gpm): 3,146

Normal Prod Drawdown (ft): 15.5

Well Depth below Grade (ft): 521.17

Top of Casing to Packer (ft):

Top of Casing to Riser (ft): 351.75

Top of Casing to Screen (ft): 427

Top/Casing to Bottom Teelpipe (ft): 511.42

Casing Diameter (in): 20

Max Prod Drawdown (ft): 37.58

Normal Prod Pumping Level (ft): 117.25

Max Prod Pumping Level (ft): 139.33

Original Specific Capacity

(gpm/ft Drawdown): 83.6

**Static Water Level History**

(Ft Below Top of Baseplate)

Measurement

Date

101.67

11/14/75

Elevation Top/Casing (MSL): 141.75

Orig Grade Elevation (MSL): 151.51

**Revision History**

Number:	Revised by:	Date:	Notes:
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**Screen + Gravel**

Screen Mfr: JOHNSON

Screen Dia (ID) in: 10

Slot Size: 50

Net Length of Slots (ft): 79.83

Screen Assembly Length (ft): 159.58

Orig Grade to Top Gravel (ft): 364

Gravel Type: MORIE

Gravel Size: 1&amp;2

Percent Retained (+/- %): 75

Sieve Size: 16

UC: 1.7



Property ID: 105 Station Name: Carlson Avenue Well Field, Pump Station & Elevated Tank

District: Smithtown

Well No: 5

Structure Type:

Test Boring No:

BSO No: S16129

WSA No: 3307

Decision Date: 10/ 1/57

Pressure Zone: Zone: 11 Kings Park High

Check to Engineer  
Station Name

### Well Construction

Well Driller: LAYNE

Well Type: ROTARY

Well Started: 12/12/57

First Test: 2/ 4/58

Final Test: 2/11/58

Accepted: 2/11/58

Construction Completed: 2/21/58

### Miscellaneous Data

Well Dwg No: SM-630-5

Aquifer: MAGOTHY

Date in Service: 2/11/58

Active: Yes

Status: PERMANENT

Retirement Date:

Normal Cap (gpm): 750

Authorized Cap (gpm): 750

Max Production (gpm): 1,536

Normal Prod Drawdown (ft): 9.63

Well Depth below Grade (ft): 549.67

Top of Casing to Packer (ft): 405.83

Top of Casing to Filter (ft):

Top of Casing to Screen (ft): 410.67

Top/Casing to Bottom Tellpipe (ft): 543.92

Casing Diameter (in): 16

Max Prod Drawdown (ft): 19.72

Normal Prod Pumping Level (ft): 131.63

Max Prod Pumping Level (ft): 141.72

Original Specific Capacity

(gpm/ft Drawdown): 77.9



**Static Water Level History**

(Ft Below Top of Baseplate)

Measurement

Date

122

5/ 1/58

Elevation Top/Casing (MSL): 160.19

Orig Grade Elevation (MSL): 164.95

**Revision History**

Number:	Revised by:	Date:	Notes:

**Screen + Gravel**

Screen Mfr: COOK

Screen Dia (ID) in: 10

Slot Size: 80

Net Length of Slots (ft): 71.58

Screen Assembly Length (ft): 139.17

Orig Grade to Top Gravel (ft): 352

Gravel Type: LAYNE

Gravel Size: 2&amp;3

Percent Retained (+/- %):

Slave Size:

UC:

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Property ID: 106 Station Name: Lawrence Road Well Field & Pump Station

District: Smithtown

Well No: 2

Structure Type: Underground SubStructure & Prefab SuperStructure

Test Boring No:

DEC No: S-24545

WSA No: 4706

Decision Date: 7/23/64

Pressure Zone: Zone: 11 Kings Park High

Plot to Scale  
Station Name

#### Well Construction

Well Order: MATHIES

Well Type: ROTARY

Well Started: 5/13/65

First Test: 6/4/65

Final Test: 6/10/65

Accepted: 6/10/65

Construction Completed: 6/12/65

#### Miscellaneous Data

Well Bore No: SM-955-4

Aquifer: MAGOTHY

Date in Service: 7/2/65

Active: Yes

Status: PERMANENT

Retirement Date:

Normal Cap (gpm): 1,200

Authorized Cap (gpm): 1,200

Max Production (gpm): 1,628

Normal Prod Drawdown (ft): 19.26

Well Depth Below Grade (ft): 511.5

Top of Casing to Packer (ft): 435.67

Top of Casing to Riser (ft):

Top of Casing to Screen (ft): 441.58

Top/Casing to Bottom Teelpipe (ft): 513.17

Casing Diameter (in): 16

Max Prod Drawdown (ft): 28.51

Normal Prod Pumping Level (ft): 147.51

Max Prod Pumping Level (ft): 156.76

Original Specific Capacity  
(gpm/ft Drawdown): 57.1

**Static Water Level History**

(Ft Below Top of Baseplate)

Measurement

Date

128.25

6/24/65

Elevation Top/Casing (MSL): 160.51

Orig Grade Elevation (MSL): 157.5

**Revision History**

Number:	Revised by:	Date:	Notes:

**Screen + Gravel**

Screen Mfr: COOK

Screen Dia (ID) in: 10

Slot Size: 70

Net Length of Hole (ft): 64.92

Screen Assembly Length (ft): 77.5

Orig Grade to Top Gravel (ft): 383

Gravel Type: MORIE

Gravel Size: 2&amp;3

Percent Retained (+/- %):

Shave Size:

UC:

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Property ID: 107

Station Name: Wheeler Road Well Field, Pump Station &amp; Booster Station

District: Smythtown

Well No: 3

Structure Type: Underground SubStructure &amp; Prefab SuperStructure

Test Boring No:

DEC No: S-23183

FPGA No: 4725

Decision Date: 7/23/64

Process Zone: Zone: 12 Central Island Int

## Miscellaneous Data

Well Orig No: SM-907-14

Aquifer: MAGOTHY

Date In Service: 5/22/65

Active: Yes

Status: PERMANENT

Retirement Date:

Normal Cap (gpm): 1,000

Authorized Cap (gpm): 1,000

Max Production (gpm): 1,551

Normal Prod Drawdown (ft): 21.48

## Well Construction

Well Driller: LAYNE

Well Type: ROTARY

Well Started: 8/12/64

First Test: 12/ 3/64

Final Test: 1/29/65

Accepted: 1/29/65

Construction Completed: 2/24/65

Well Depth below Grade (ft): 340.92

Top of Casing to Pecker (ft): 241.17

Top of Casing to River (ft):

Top of Casing to Screen (ft): 246.17

Top Casing to Bottom Tailpipe (ft): 343.75

Casing Diameter (in): 16

Max Prod Drawdown (ft): 33.28

Normal Prod Pumping Level (ft): 49.79

Max Prod Pumping Level (ft): 61.61

Original Specific Capacity  
(gpm/ft Drawdown): 46.6

**Static Water Level History**

(Ft Below Top of Baseplate)

Measurement

Date

28.33

5/ 4/65

Elevation Top/Casing (MSL): 64

Orig Grade Elevation (MSL): 61.13

**Screen + Gravel**

Screen Mfr: COOK

Screen Dia (ID) in: 10

Slot Size: 70

Net Length of Slots (ft): 70

Screen Assembly Length (ft): 102.58

Orig Grade to Top Gravel (ft): 188

Gravel Type: MORIE

Gravel Size: 2&amp;3

Percent Retained (+ / - %):

Slave Size:

UC:

**Revision History**

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Property ID: 110

Station Name: Falcon Drive Well Field &amp; Pump Station

District: Smithtown

Well No: 1

Structure Type: 1-story Masonry

Test Boring No: S-41344T

DEC No: S-14326

WSA No: 2992

Decision Date: 8/12/56

Pressure Zone: Zone: 12 Central Island Int

## Miscellaneous Data

Well Dwg No: XBSM-936-2A

Aquifer: MAGOTHY

Date in Service: 1/1/56

Active: Yes

Status: PERMANENT

Retirement Date:

Normal Cap (gpm): 1,400

Authorized Cap (gpm): 1,400

Max Production (gpm):

Normal Prod Drawdown (ft):

## Well Construction

Well Driller:

Well Type: ROTARY

Well Started:

First Test:

Final Test:

Accepted:

Construction Completed:

Well Depth Below Grade (ft): 225

Top of Casing to Parker (ft): 141

Top of Casing to Riser (ft):

Top of Casing to Screen (ft): 141

Top/Casing to Bottom Tailpipe (ft): 225

Casing Diameter (in): 16

Max Prod Drawdown (ft):

Normal Prod Pumping Level (ft):

Max Prod Pumping Level (ft):

Original Specific Capacity

(gpm/ft Drawdown):

Property ID: 111

Station Name: Capital Court Well Field &amp; Pump Station

District: Smithtown

Click to Grant  
Station Name

## Well Construction

Well No: 1

Well Driller:

Structure Type: 1-story Masonry

Well Type: ROTARY

Test Boring No: NO

Well Started:

DEC No: S-20369

First Test:

WSA No: 3809

Final Test:

Decision Date: 8/23/60

Accepted:

Pressure Zone: Zone: 12 Central Island Int

Construction Completed:

## Miscellaneous Data

Well Dwg No: XBSM-936-5

Well Depth below Grade (ft): 310

Aquifer: MAGOTHY

Top of Casing to Packer (ft): 259.08

Date in Service: 4/26/62

Top of Casing to Riser (ft):

Active: Yes

Top of Casing to Screen (ft): 259.08

Status: OUT OF SERVICE

Top/Casing to Bottom Tailpipe (ft):

Retirement Date:

Casing Diameter (in): 16

Normal Cap (gpm): 1,300

Max Prod Drawdown (ft):

Authorized Cap (gpm): 1,400

Normal Prod Pumping Level (ft):

Max Production (gpm): 1,400

Max Prod Pumping Level (ft):

Normal Prod Drawdown (ft):

Original Specific Capacity  
(gpm/ft Drawdown):

PERMANENT



Property ID: 157

Station Name:

Larkfield Road Well Field &amp; Pump Station

SOUTH SPUR

District: Huntington

Well No: 3

Structure Type: Underground Concrete

Test Boring No:

DEO No: 5-53747

WSA No: 6463

Decision Date: 10/ 3/74

Pressure Zone: Zone: 10 Northport Very High

Cost to Owner  
Construction

## Well Construction

Well Driller: STRATA

Well Type: ROTARY

Well Started: 12/13/74

First Test: 3/24/75

Final Test: 10/ 3/75

Accepted: 10/ 6/76

Construction Completed: 10/10/75

## Miscellaneous Data

Well Log No: BHU-2301-6

Aquifer: MAGOTHY

Date in Service: 10/25/76

Active: Yes

Status: PERMANENT

Retirement Date:

Normal Cap (gpm): 1,200

Authorized Cap (gpm): 1,400

Max Production (gpm): 1,500

Normal Prod Drawdown (ft): 24.83

Well Depth Below Grade (ft): 458

Top of Casing to Packer (ft):

Top of Casing to Blow (ft): 230.17

Top of Casing to Screen (ft): 362.83

Top/Casing to Bottom Tealips (ft): 445.67

Casing Diameter (in): 20

Max Prod Drawdown (ft): 31

Normal Prod Pumping Level (ft): 132.17

Max Prod Pumping Level (ft): 138.33

Original Specific Capacity

(gpm/ft Drawdown): 48.3



**Static Water Level History**

(Ft Below Top of Baseplate)

Measurement

Date

107.33

4/23/76

Elevation Top/Casing (MSL): 163.47

Orig Grade Elevation (MSL): 170.9

**Revision History**

Number:	Revised by:	Date:	Notes:

**Screen + Gravel**

Screen Mfr: COOK

Screen Dia (ID) in: 10

Slot Size: 50

Net Length of Stone (ft): 60.08

Screen Assembly Length (ft): 155.42

Orig Grade to Top Gravel (ft): 305

Gravel Type: MORIE

Gravel Size: 1&amp;2

Percent Retained (+75%): 75

Shave Size: 16

UC: 1.7

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Property ID: 186

Station Name: St. Johnland Road Well Field &amp; Pump Station

District: Smithtown

Well No: 1

Structure Type: 1-story Masonry

Test Boring No: S-39333T

DEC No: S-40711

WSA No: 5928

Decision Date: 3/12/71

Pressure Zone: Zone: 11 Kings Park High

## Miscellaneous Data

Well Dwg No: BSM-1692-26

Aquifer: GLACIAL

Date in Service: 6/15/72

Active: Yes

Status: PERMANENT

Retirement Date:

Normal Cap (gpm): 1,200

Authorized Cap (gpm): 1,200

Max Production (gpm): 1,683

Normal Prod Drawdown (ft): 14.25

## Well Construction

Well Driller: LAYNE

Well Type: ROTARY

Well Started: 8/18/71

First Test: 9/17/71

Final Test: 10/ 8/71

Accepted: 10/11/71

Construction Completed: 10/18/71

Well Depth below Grade (ft): 273.5

Top of Casing to Packer (ft):

Top of Casing to Riser (ft): 142.75

Top of Casing to Screen (ft): 218.08

Top/Casing to Bottom Tailpipe (ft): 272.58

Casing Diameter (in): 20

Max Prod Drawdown (ft): 20

Normal Prod Pumping Level (ft): 51.17

Max Prod Pumping Level (ft): 56.83

Original Specific Capacity  
(gpm/ft Drawdown): 84

Property ID: 187

Station Name: New Mill Road Well Field &amp; Pump Station

District: Smithtown

Well No: 1

Structure Type:

Test Boring No: S-39518T

DEC No: S-42270

WBA No: 6030

Decision Date: 11/23/71

Pressure Zone: Zone: 12 Central Island Int

## Miscellaneous Data

Well Dwg No: BSM-1868-22

Aquifer: MAGOTHY

Date in Service: 5/28/72

Active: Yes

Status: PERMANENT

Retirement Date:

Normal Cap (gpm): 1,400

Authorized Cap (gpm): 1,400

Max Production (gpm): 1,585

Normal Prod Drawdown (ft): 52.42

## Well Construction

Well Driller: DELTA

Well Type: ROTARY

Well Started: 11/ 6/71

First Test: 1/25/72

Final Test: 2/11/72

Accepted: 2/13/72

Construction Completed: 2/24/72

Well Depth below Grade (ft): 546.83

Top of Casing to Packer (ft):

Top of Casing to River (ft): 496.92

Top of Casing to Screen (ft): 567.25

Top-Casing to Bottom Telpipe (ft): 641.42

Casing Diameter (in): 20

Max Prod Drawdown (ft): 59.33

Normal Prod Pumping Level (ft): 87.92

Max Prod Pumping Level (ft): 914.83

Original Specific Capacity

(gpm/ft Drawdown): 26.7

Property ID: 199 Station Name: Middleville Road Well Field, Pump Station & 2,290,000-Gallon Standpipe

District: Huntington

Well No: 1

Structure Type: Underground Concrete

Test Boring No: S-49439T

REC No: S-54162

WSA No: 6460

Decision Date: 9/13/74

Pressure Zone: Zone: 09 Northport Int

Click to Show  
Station Name

#### Well Construction

Well Driller: LAUMAN

Well Type: ROTARY

Well Started: 1/ 3/75

First Test: 3/ 6/75

Final Test: 3/18/75

Accepted: 3/20/75

Construction Completed: 4/ 4/75

#### Miscellaneous Data

Well Bore No: BHU-1908-21

Aquifer: GLACIAL

Date in Service: 4/12/77

Active: Yes

Status: PERMANENT

Retirement Date:

Normal Cap (gpm): 1,100

Authorized Cap (gpm): 1,400

Max Production (gpm): 1,739

Normal Prod Drawdown (ft): 14.83

Well Depth below Grade (ft): 548

Top of Casing to Packer (ft):

Top of Casing to Riser (ft): 392.83

Top of Casing to Screen (ft): 462.75

Top/Casing to Bottom Tailpipe (ft): 543.58

Casing Diameter (in): 20

Max Prod Drawdown (ft): 23.5

Normal Prod Pumping Level (ft): 139.5

Max Prod Pumping Level (ft): 149.17

Original Specific Capacity  
(gpm/ft Drawdown): 73.9

Property ID: 223		Station Name: Hallock Avenue Well Field & Pump Station	
District: Southtown		Click to Search Station Name	
Well No:	1	Well Construction	
Structure Type:	Underground Concrete	Well Driller:	
Test Boring No:	S-31711T	Well Type:	ROTARY
DEC No:	S-72245	Well Started:	
WBA No:	7189	First Test:	
Decision Date:	10/26/81	Final Test:	
Pressure Zone:	Zone: 12 Central Island Int	Accepted:	
		Construction Completed:	
Miscellaneous Data		Well Depth below Grade (ft):	525
Well Dwg No:	BSM-3174-19	Top of Casing to Packer (ft):	
Aquifer:	MAGOTHY	Top of Casing to Riser (ft):	
Date in Service:	8/24/82	Top of Casing to Screen (ft):	
Active:	Yes	Top Casing to Bottom Tailpipe (ft):	
Status:	TEMPORARY PERMANENT	Casing Diameter (in):	20
Retirement Date:		Max Prod Drawdown (ft):	
Normal Cap (gpm):	1,250	Normal Prod Pumping Level (ft):	
Authorized Cap (gpm):	1,300	Max Prod Pumping Level (ft):	
Max Production (gpm):		Original Specific Capacity (gpm/ft Drawdown):	30.5
Normal Prod Drawdown (ft):			



5-H



10000	10001	10002	10003	10004	10005	10006	10007	10008	10009	10010	10011	10012	10013	10014	10015	10016	10017	10018	10019	10020	10021	10022	10023	10024	10025	10026	10027	10028	10029	10030	10031	10032	10033	10034	10035	10036	10037	10038	10039	10040	10041	10042	10043	10044	10045	10046	10047	10048	10049	10050	10051	10052	10053	10054	10055	10056	10057	10058	10059	10060	10061	10062	10063	10064	10065	10066	10067	10068	10069	10070	10071	10072	10073	10074	10075	10076	10077	10078	10079	10080	10081	10082	10083	10084	10085	10086	10087	10088	10089	10090	10091	10092	10093	10094	10095	10096	10097	10098	10099	10100
-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------

LEGEND

Center Internal 20' to 40' LEGEND

Scale 1" = 400'

APPROVED:

CHIEF ENG'R

GEN'L MGR.

SUFFOLK COUNTY WATER AUTHORITY

SMITHTOWN DISTRICT

SMITHTOWN-THE BRANCH- NESCONSET

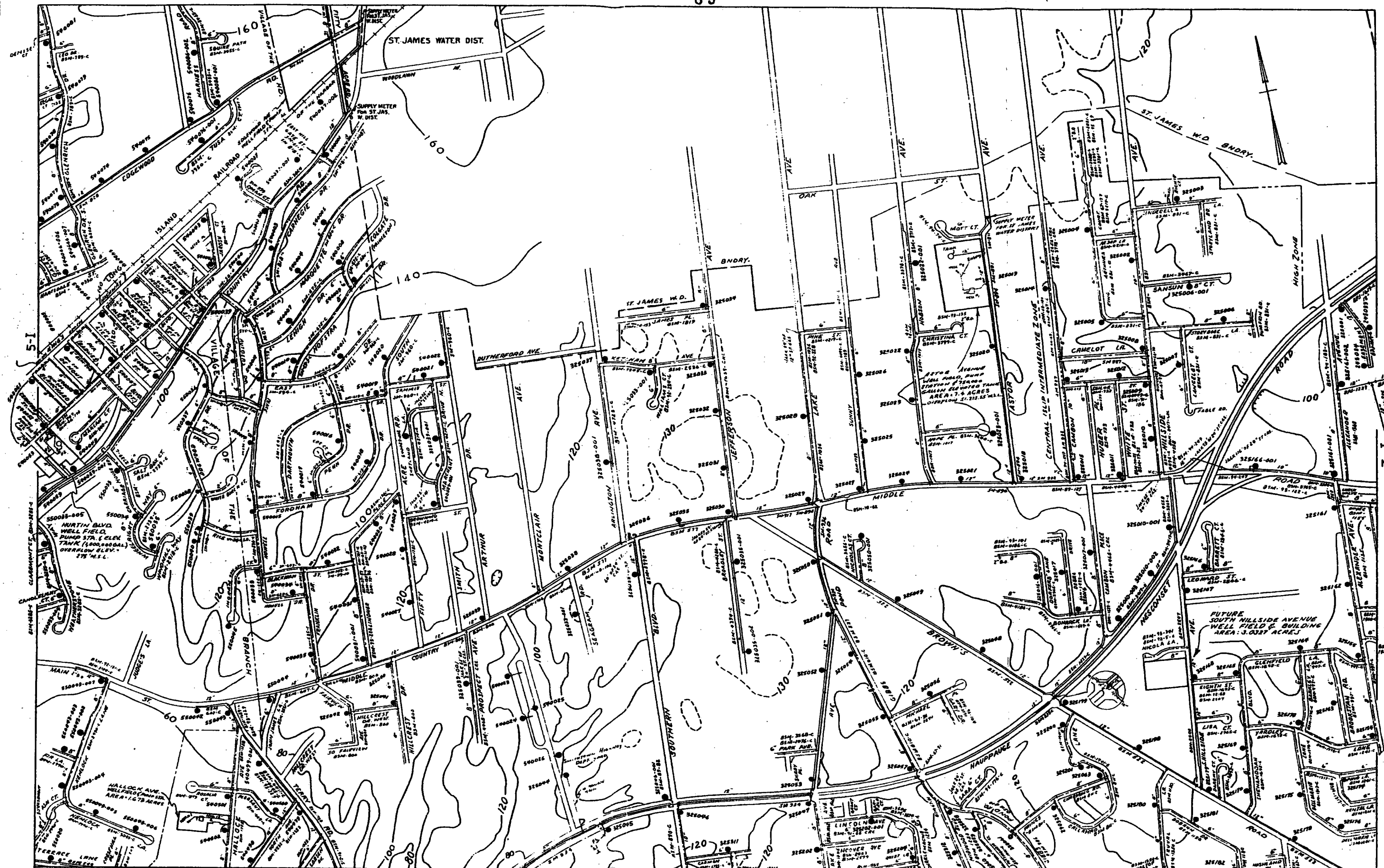
TOWN OF SMITHTOWN

DISTRIBUTION SYSTEM

INTERMEDIATE ZONE

DEC 27, 1956

6-H



REVISION	DATE	BY	CHKD	DESCRIPTION
1	MAY 1, 1952	W. J. HARRIS	W. J. HARRIS	ORIGINAL
2	MAY 1, 1952	W. J. HARRIS	W. J. HARRIS	REVISION
3	MAY 1, 1952	W. J. HARRIS	W. J. HARRIS	REVISION
4	MAY 1, 1952	W. J. HARRIS	W. J. HARRIS	REVISION
5	MAY 1, 1952	W. J. HARRIS	W. J. HARRIS	REVISION
6	MAY 1, 1952	W. J. HARRIS	W. J. HARRIS	REVISION
7	MAY 1, 1952	W. J. HARRIS	W. J. HARRIS	REVISION
8	MAY 1, 1952	W. J. HARRIS	W. J. HARRIS	REVISION
9	MAY 1, 1952	W. J. HARRIS	W. J. HARRIS	REVISION
10	MAY 1, 1952	W. J. HARRIS	W. J. HARRIS	REVISION
11	MAY 1, 1952	W. J. HARRIS	W. J. HARRIS	REVISION
12	MAY 1, 1952	W. J. HARRIS	W. J. HARRIS	REVISION
13	MAY 1, 1952	W. J. HARRIS	W. J. HARRIS	REVISION
14	MAY 1, 1952	W. J. HARRIS	W. J. HARRIS	REVISION
15	MAY 1, 1952	W. J. HARRIS	W. J. HARRIS	REVISION
16	MAY 1, 1952	W. J. HARRIS	W. J. HARRIS	REVISION
17	MAY 1, 1952	W. J. HARRIS	W. J. HARRIS	REVISION
18	MAY 1, 1952	W. J. HARRIS	W. J. HARRIS	REVISION
19	MAY 1, 1952	W. J. HARRIS	W. J. HARRIS	REVISION
20	MAY 1, 1952	W. J. HARRIS	W. J. HARRIS	REVISION

CONTOUR INTERVAL - 20 FEET

LEGEND

Zone Boundary

6" or Smaller

8" or Larger

Village Boundary

Scale: 1" = 400'

Valve Hydrant

Town Boundary

APPROVED:

CONS. ENGR.

GENL. MGR.

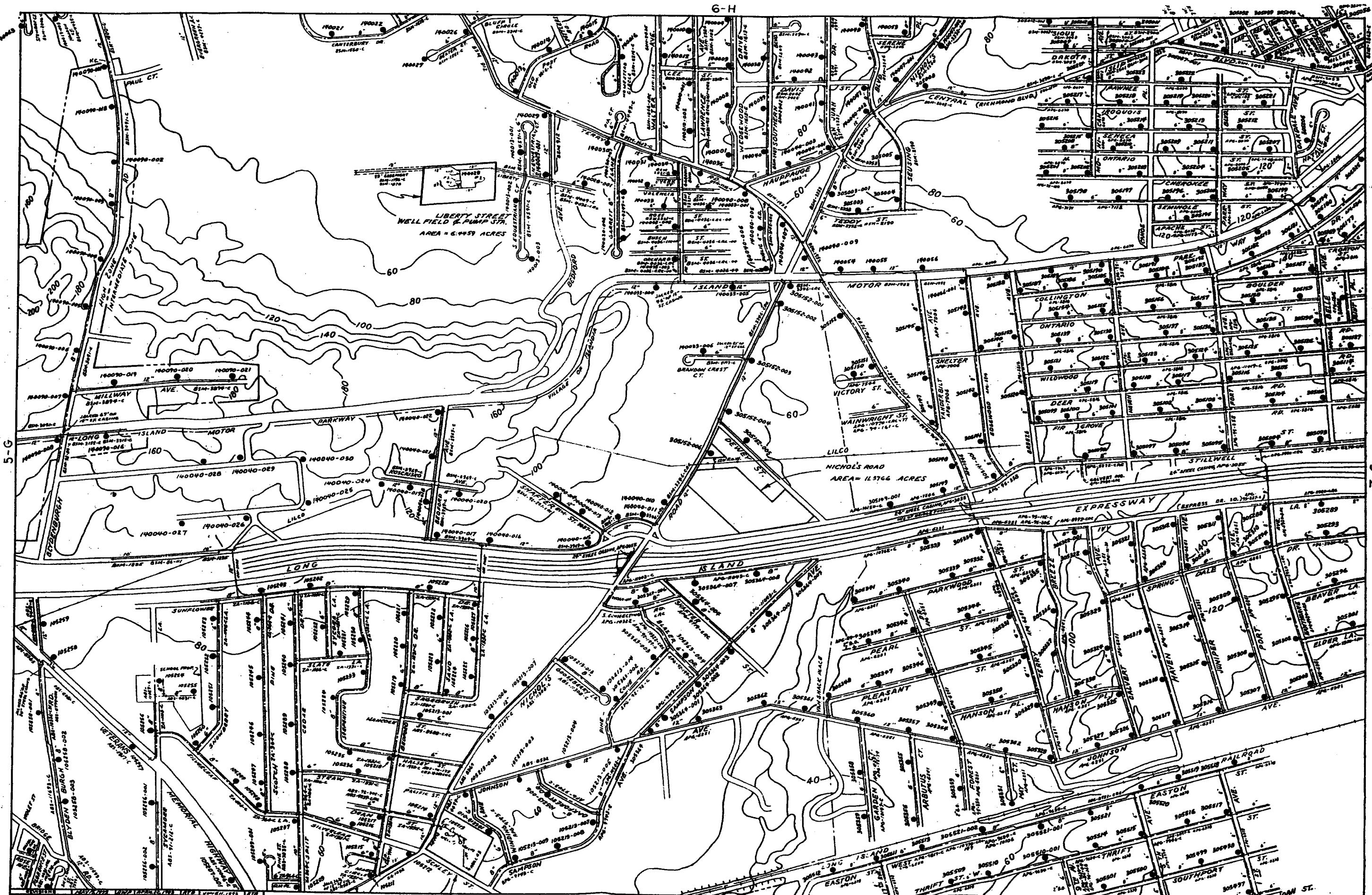
SUFFOLK COUNTY WATER AUTHORITY  
SMITHTOWN DISTRICT  
SMITHTOWN  
TOWN OF SMITHTOWN  
DISTRIBUTION SYSTEM

INTERMEDIATE & HIGH  
ZONES

NOV. 1, 1952

6-I





10000-001	10000-002	10000-003	10000-004	10000-005	10000-006	10000-007	10000-008	10000-009	10000-010
10000-011	10000-012	10000-013	10000-014	10000-015	10000-016	10000-017	10000-018	10000-019	10000-020
10000-021	10000-022	10000-023	10000-024	10000-025	10000-026	10000-027	10000-028	10000-029	10000-030
10000-031	10000-032	10000-033	10000-034	10000-035	10000-036	10000-037	10000-038	10000-039	10000-040
10000-041	10000-042	10000-043	10000-044	10000-045	10000-046	10000-047	10000-048	10000-049	10000-050
10000-051	10000-052	10000-053	10000-054	10000-055	10000-056	10000-057	10000-058	10000-059	10000-060
10000-061	10000-062	10000-063	10000-064	10000-065	10000-066	10000-067	10000-068	10000-069	10000-070
10000-071	10000-072	10000-073	10000-074	10000-075	10000-076	10000-077	10000-078	10000-079	10000-080
10000-081	10000-082	10000-083	10000-084	10000-085	10000-086	10000-087	10000-088	10000-089	10000-090
10000-091	10000-092	10000-093	10000-094	10000-095	10000-096	10000-097	10000-098	10000-099	10000-100

NICHOLS ROAD WELL  
FIELD PUMP STATION  
AREA = 9.569

Contour Interval 20 Feet  
4" or Smaller  
8"  
12" or Larger  
Village Boundary  
Scale: 1" = 400'

LEGEND  
Zone Boundary  
Valve Hydrant  
Town Boundary

APPROVED:  
CHIEF ENGR.  
GENL. MGR.

SUFFOLK COUNTY WATER AUTHORITY  
BAY SHORE DISTRICT  
BEDFORD PARK - RONKONKOMA  
TOWN OF ISLIP  
DISTRIBUTION SYSTEM

INTERMEDIATE & HIGH  
ZONES  
AUG. 20, 1964 6-G



DATE	BY	APPROVED	DATE	BY	APPROVED
MAY 15, 1967	W. J. B. JR.	W. J. B. JR.	MAY 15, 1967	W. J. B. JR.	W. J. B. JR.
MAY 15, 1967	W. J. B. JR.	W. J. B. JR.	MAY 15, 1967	W. J. B. JR.	W. J. B. JR.
MAY 15, 1967	W. J. B. JR.	W. J. B. JR.	MAY 15, 1967	W. J. B. JR.	W. J. B. JR.
MAY 15, 1967	W. J. B. JR.	W. J. B. JR.	MAY 15, 1967	W. J. B. JR.	W. J. B. JR.
MAY 15, 1967	W. J. B. JR.	W. J. B. JR.	MAY 15, 1967	W. J. B. JR.	W. J. B. JR.
MAY 15, 1967	W. J. B. JR.	W. J. B. JR.	MAY 15, 1967	W. J. B. JR.	W. J. B. JR.
MAY 15, 1967	W. J. B. JR.	W. J. B. JR.	MAY 15, 1967	W. J. B. JR.	W. J. B. JR.
MAY 15, 1967	W. J. B. JR.	W. J. B. JR.	MAY 15, 1967	W. J. B. JR.	W. J. B. JR.
MAY 15, 1967	W. J. B. JR.	W. J. B. JR.	MAY 15, 1967	W. J. B. JR.	W. J. B. JR.

Contour Interval - 20 Feet  
4" or Smaller  
8"  
12" or Larger  
Village Boundary  
Scale 1"=400'

Zone Boundary  
Valve Hydrant  
Town Boundary  
Scale 1"=400'

APPROVED:  
W. J. B. JR.  
CHIEF ENGR.  
L. J. B. JR.  
GENL. MGR.

SUFFOLK COUNTY WATER AUTHORITY  
SMITHTOWN DISTRICT  
SAN REMO-NISSEQUOGUE  
TOWN OF SMITHTOWN  
DISTRIBUTION SYSTEM

INTERMEDIATE & HIGH ZONES  
FEB. 1, 1967  
5-J



5-H

APPROVED :  
CONS. ENGR.  
*[Signature]*  
GENL. MGR.

INTERMEDIATE ZONE	
NOV 1 1952	5-1





REVISIONS	DATE	BY	REASON	DATE	BY	REASON	DATE	BY	REASON	DATE	BY	REASON	DATE	BY	REASON	DATE	BY	REASON	DATE	BY	REASON
1	MAY 1, 1952	W.C.	INITIAL																		
2	MAY 1, 1952	W.C.	INITIAL																		
3	MAY 1, 1952	W.C.	INITIAL																		
4	MAY 1, 1952	W.C.	INITIAL																		
5	MAY 1, 1952	W.C.	INITIAL																		
6	MAY 1, 1952	W.C.	INITIAL																		
7	MAY 1, 1952	W.C.	INITIAL																		
8	MAY 1, 1952	W.C.	INITIAL																		
9	MAY 1, 1952	W.C.	INITIAL																		
10	MAY 1, 1952	W.C.	INITIAL																		
11	MAY 1, 1952	W.C.	INITIAL																		
12	MAY 1, 1952	W.C.	INITIAL																		
13	MAY 1, 1952	W.C.	INITIAL																		
14	MAY 1, 1952	W.C.	INITIAL																		
15	MAY 1, 1952	W.C.	INITIAL																		
16	MAY 1, 1952	W.C.	INITIAL																		
17	MAY 1, 1952	W.C.	INITIAL																		
18	MAY 1, 1952	W.C.	INITIAL																		
19	MAY 1, 1952	W.C.	INITIAL																		
20	MAY 1, 1952	W.C.	INITIAL																		

Contour Interval: 20' or 40' or 60' or 80' or 100' or 120' or 140' or 160' or 180' or 200' or 220' or 240' or 260' or 280' or 300' or 320' or 340' or 360' or 380' or 400' or 420' or 440' or 460' or 480' or 500' or 520' or 540' or 560' or 580' or 600' or 620' or 640' or 660' or 680' or 700' or 720' or 740' or 760' or 780' or 800' or 820' or 840' or 860' or 880' or 900' or 920' or 940' or 960' or 980' or 1000'

4" or Smaller  
8"  
12" or Larger

Village Boundary  
Town Boundary

SCALE: 1"=400'

APPROVED:

CONS. ENGR.

GENL. MGR.

SUFFOLK COUNTY WATER AUTHORITY

SMITHTOWN DISTRICT

SMITHTOWN-BRANCH

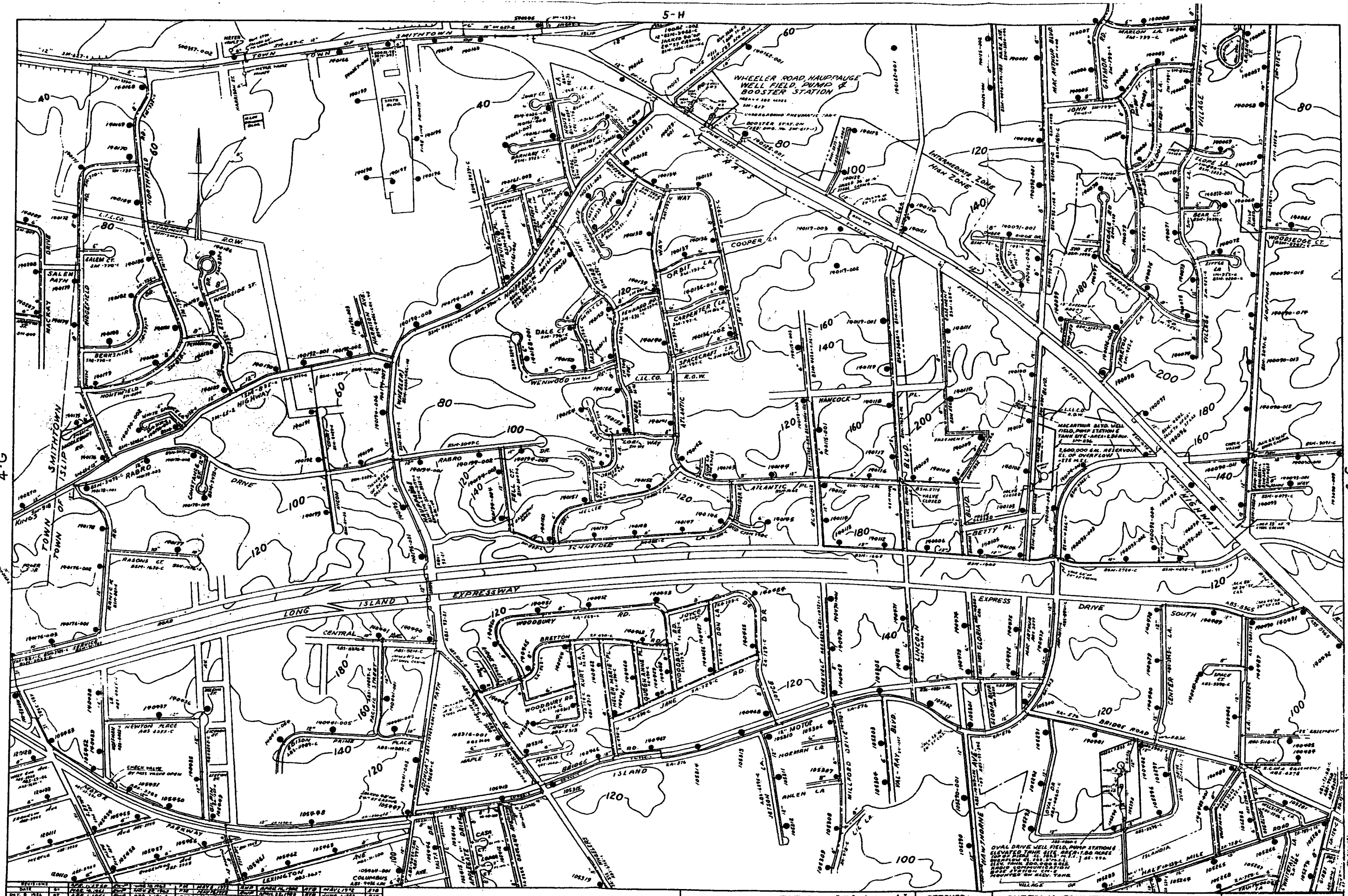
TOWN OF SMITHTOWN

DISTRIBUTION SYSTEM

INTERMEDIATE ZONE

NOV. 1, 1952

5-H



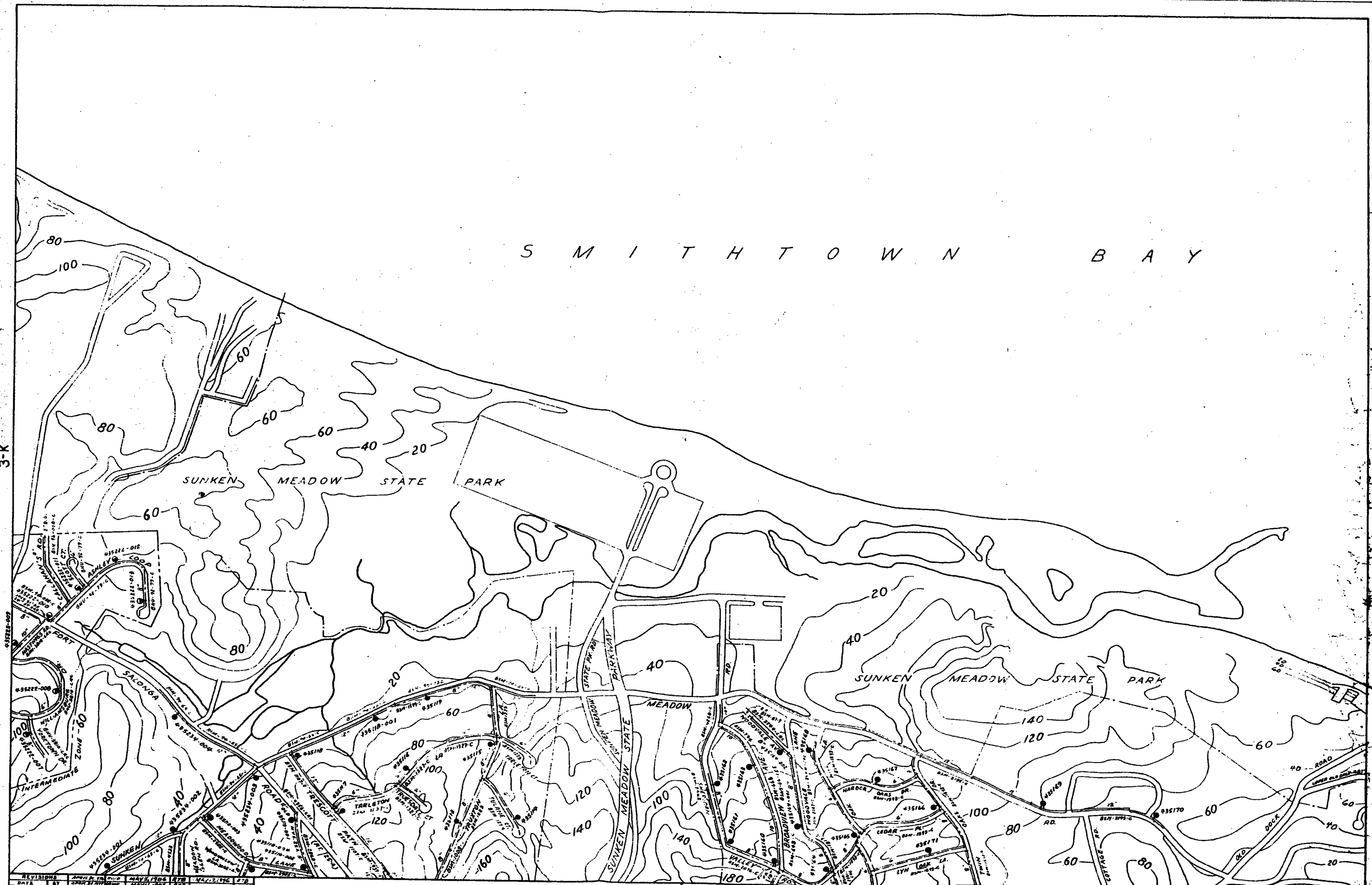
DATE	BY	REVISION	DESCRIPTION
NOV. 1, 1955	W. J. HILL	1	ORIGINAL
MAY 1, 1956	W. J. HILL	2	REVISED
MAY 1, 1956	W. J. HILL	3	REVISED
MAY 1, 1956	W. J. HILL	4	REVISED
MAY 1, 1956	W. J. HILL	5	REVISED
MAY 1, 1956	W. J. HILL	6	REVISED
MAY 1, 1956	W. J. HILL	7	REVISED
MAY 1, 1956	W. J. HILL	8	REVISED
MAY 1, 1956	W. J. HILL	9	REVISED
MAY 1, 1956	W. J. HILL	10	REVISED
MAY 1, 1956	W. J. HILL	11	REVISED
MAY 1, 1956	W. J. HILL	12	REVISED
MAY 1, 1956	W. J. HILL	13	REVISED
MAY 1, 1956	W. J. HILL	14	REVISED
MAY 1, 1956	W. J. HILL	15	REVISED
MAY 1, 1956	W. J. HILL	16	REVISED
MAY 1, 1956	W. J. HILL	17	REVISED
MAY 1, 1956	W. J. HILL	18	REVISED
MAY 1, 1956	W. J. HILL	19	REVISED
MAY 1, 1956	W. J. HILL	20	REVISED

Contour Interval 20 Feet  
 4" Or Smaller  
 8"  
 12" Or Larger  
 Village Boundary  
 SCALE: 1" = 400'

APPROVED:  
 CHIEF ENGR  
 GEN. MGR

SUFFOLK COUNTY WATER AUTHORITY  
 BAY SHORE DISTRICT  
 CENTRAL ISLIP  
 TOWN OF ISLIP  
 DISTRIBUTION SYSTEM

INTERMEDIATE & HIGH ZONES  
 OCT. 8, 1956 5-G



REVISIONS	DATE	BY	APP'D	REASON
1	MAY 1, 1968	W.P.	W.P.	INITIAL DESIGN
2	MAY 1, 1968	W.P.	W.P.	REVISIONS
3	MAY 1, 1968	W.P.	W.P.	REVISIONS
4	MAY 1, 1968	W.P.	W.P.	REVISIONS
5	MAY 1, 1968	W.P.	W.P.	REVISIONS
6	MAY 1, 1968	W.P.	W.P.	REVISIONS
7	MAY 1, 1968	W.P.	W.P.	REVISIONS
8	MAY 1, 1968	W.P.	W.P.	REVISIONS
9	MAY 1, 1968	W.P.	W.P.	REVISIONS
10	MAY 1, 1968	W.P.	W.P.	REVISIONS
11	MAY 1, 1968	W.P.	W.P.	REVISIONS
12	MAY 1, 1968	W.P.	W.P.	REVISIONS
13	MAY 1, 1968	W.P.	W.P.	REVISIONS
14	MAY 1, 1968	W.P.	W.P.	REVISIONS
15	MAY 1, 1968	W.P.	W.P.	REVISIONS
16	MAY 1, 1968	W.P.	W.P.	REVISIONS
17	MAY 1, 1968	W.P.	W.P.	REVISIONS
18	MAY 1, 1968	W.P.	W.P.	REVISIONS
19	MAY 1, 1968	W.P.	W.P.	REVISIONS
20	MAY 1, 1968	W.P.	W.P.	REVISIONS

Contour Interval: 20 feet  
 4' or Smaller  
 8' or Larger  
 Village Boundary  
 SCALE: 1" = 400'  
 LEGEND  
 Zone Boundary  
 Valve Hydrant  
 Town Boundary  
 APPROVED:  
 CHIEF ENGR.  
 GEN. MGR.

SUFFOLK COUNTY WATER AUTHORITY  
 SMITHTOWN DISTRICT  
 SUNKEN MEADOW  
 TOWN OF SMITHTOWN  
 DISTRIBUTION SYSTEM  
 HIGH ZONE 4  
 INTERMEDIATE ZONE  
 MAR. 7, 1968 4-K





REVISION	DATE	BY	CHKD	APPD	DESCRIPTION
1	11/1/52	W. J. ...	...	...	...
2	11/1/52	W. J. ...	...	...	...
3	11/1/52	W. J. ...	...	...	...
4	11/1/52	W. J. ...	...	...	...
5	11/1/52	W. J. ...	...	...	...
6	11/1/52	W. J. ...	...	...	...
7	11/1/52	W. J. ...	...	...	...
8	11/1/52	W. J. ...	...	...	...
9	11/1/52	W. J. ...	...	...	...
10	11/1/52	W. J. ...	...	...	...
11	11/1/52	W. J. ...	...	...	...
12	11/1/52	W. J. ...	...	...	...
13	11/1/52	W. J. ...	...	...	...
14	11/1/52	W. J. ...	...	...	...
15	11/1/52	W. J. ...	...	...	...
16	11/1/52	W. J. ...	...	...	...
17	11/1/52	W. J. ...	...	...	...
18	11/1/52	W. J. ...	...	...	...
19	11/1/52	W. J. ...	...	...	...
20	11/1/52	W. J. ...	...	...	...
21	11/1/52	W. J. ...	...	...	...
22	11/1/52	W. J. ...	...	...	...
23	11/1/52	W. J. ...	...	...	...
24	11/1/52	W. J. ...	...	...	...
25	11/1/52	W. J. ...	...	...	...
26	11/1/52	W. J. ...	...	...	...
27	11/1/52	W. J. ...	...	...	...
28	11/1/52	W. J. ...	...	...	...
29	11/1/52	W. J. ...	...	...	...
30	11/1/52	W. J. ...	...	...	...
31	11/1/52	W. J. ...	...	...	...
32	11/1/52	W. J. ...	...	...	...
33	11/1/52	W. J. ...	...	...	...
34	11/1/52	W. J. ...	...	...	...
35	11/1/52	W. J. ...	...	...	...
36	11/1/52	W. J. ...	...	...	...
37	11/1/52	W. J. ...	...	...	...
38	11/1/52	W. J. ...	...	...	...
39	11/1/52	W. J. ...	...	...	...
40	11/1/52	W. J. ...	...	...	...
41	11/1/52	W. J. ...	...	...	...
42	11/1/52	W. J. ...	...	...	...
43	11/1/52	W. J. ...	...	...	...
44	11/1/52	W. J. ...	...	...	...
45	11/1/52	W. J. ...	...	...	...
46	11/1/52	W. J. ...	...	...	...
47	11/1/52	W. J. ...	...	...	...
48	11/1/52	W. J. ...	...	...	...
49	11/1/52	W. J. ...	...	...	...
50	11/1/52	W. J. ...	...	...	...
51	11/1/52	W. J. ...	...	...	...
52	11/1/52	W. J. ...	...	...	...
53	11/1/52	W. J. ...	...	...	...
54	11/1/52	W. J. ...	...	...	...
55	11/1/52	W. J. ...	...	...	...
56	11/1/52	W. J. ...	...	...	...
57	11/1/52	W. J. ...	...	...	...
58	11/1/52	W. J. ...	...	...	...
59	11/1/52	W. J. ...	...	...	...
60	11/1/52	W. J. ...	...	...	...
61	11/1/52	W. J. ...	...	...	...
62	11/1/52	W. J. ...	...	...	...
63	11/1/52	W. J. ...	...	...	...
64	11/1/52	W. J. ...	...	...	...
65	11/1/52	W. J. ...	...	...	...
66	11/1/52	W. J. ...	...	...	...
67	11/1/52	W. J. ...	...	...	...
68	11/1/52	W. J. ...	...	...	...
69	11/1/52	W. J. ...	...	...	...
70	11/1/52	W. J. ...	...	...	...
71	11/1/52	W. J. ...	...	...	...
72	11/1/52	W. J. ...	...	...	...
73	11/1/52	W. J. ...	...	...	...
74	11/1/52	W. J. ...	...	...	...
75	11/1/52	W. J. ...	...	...	...
76	11/1/52	W. J. ...	...	...	...
77	11/1/52	W. J. ...	...	...	...
78	11/1/52	W. J. ...	...	...	...
79	11/1/52	W. J. ...	...	...	...
80	11/1/52	W. J. ...	...	...	...
81	11/1/52	W. J. ...	...	...	...
82	11/1/52	W. J. ...	...	...	...
83	11/1/52	W. J. ...	...	...	...
84	11/1/52	W. J. ...	...	...	...
85	11/1/52	W. J. ...	...	...	...
86	11/1/52	W. J. ...	...	...	...
87	11/1/52	W. J. ...	...	...	...
88	11/1/52	W. J. ...	...	...	...
89	11/1/52	W. J. ...	...	...	...
90	11/1/52	W. J. ...	...	...	...
91	11/1/52	W. J. ...	...	...	...
92	11/1/52	W. J. ...	...	...	...
93	11/1/52	W. J. ...	...	...	...
94	11/1/52	W. J. ...	...	...	...
95	11/1/52	W. J. ...	...	...	...
96	11/1/52	W. J. ...	...	...	...
97	11/1/52	W. J. ...	...	...	...
98	11/1/52	W. J. ...	...	...	...
99	11/1/52	W. J. ...	...	...	...
100	11/1/52	W. J. ...	...	...	...

LOW ZONE ○  
INTERMEDIATE ZONE ○  
HIGH ZONE ●

Contour Interval - 20 Feet  
4" or smaller  
12" or larger  
Village Boundary  
Scale: 1"=400'

LEGEND  
Zone Boundary  
Valve Hydrant  
Town Boundary

APPROVED:  
CONS. ENGR.  
GENL. MGR.

SUFFOLK COUNTY WATER AUTHORITY  
SMITHTOWN DISTRICT  
KINGS PARK  
TOWN OF SMITHTOWN  
DISTRIBUTION SYSTEM

High, Intermediate  
& Very High Zone  
NOV. 1, 1952 4-J







DATE	BY	REVISION	DATE	BY	REVISION	DATE	BY	REVISION	DATE	BY	REVISION
MAY 1960	W.M.	1	MAY 1960	W.M.	1	MAY 1960	W.M.	1	MAY 1960	W.M.	1
MAY 1960	W.M.	2	MAY 1960	W.M.	2	MAY 1960	W.M.	2	MAY 1960	W.M.	2
MAY 1960	W.M.	3	MAY 1960	W.M.	3	MAY 1960	W.M.	3	MAY 1960	W.M.	3
MAY 1960	W.M.	4	MAY 1960	W.M.	4	MAY 1960	W.M.	4	MAY 1960	W.M.	4
MAY 1960	W.M.	5	MAY 1960	W.M.	5	MAY 1960	W.M.	5	MAY 1960	W.M.	5
MAY 1960	W.M.	6	MAY 1960	W.M.	6	MAY 1960	W.M.	6	MAY 1960	W.M.	6
MAY 1960	W.M.	7	MAY 1960	W.M.	7	MAY 1960	W.M.	7	MAY 1960	W.M.	7
MAY 1960	W.M.	8	MAY 1960	W.M.	8	MAY 1960	W.M.	8	MAY 1960	W.M.	8
MAY 1960	W.M.	9	MAY 1960	W.M.	9	MAY 1960	W.M.	9	MAY 1960	W.M.	9
MAY 1960	W.M.	10	MAY 1960	W.M.	10	MAY 1960	W.M.	10	MAY 1960	W.M.	10
MAY 1960	W.M.	11	MAY 1960	W.M.	11	MAY 1960	W.M.	11	MAY 1960	W.M.	11
MAY 1960	W.M.	12	MAY 1960	W.M.	12	MAY 1960	W.M.	12	MAY 1960	W.M.	12
MAY 1960	W.M.	13	MAY 1960	W.M.	13	MAY 1960	W.M.	13	MAY 1960	W.M.	13
MAY 1960	W.M.	14	MAY 1960	W.M.	14	MAY 1960	W.M.	14	MAY 1960	W.M.	14
MAY 1960	W.M.	15	MAY 1960	W.M.	15	MAY 1960	W.M.	15	MAY 1960	W.M.	15
MAY 1960	W.M.	16	MAY 1960	W.M.	16	MAY 1960	W.M.	16	MAY 1960	W.M.	16
MAY 1960	W.M.	17	MAY 1960	W.M.	17	MAY 1960	W.M.	17	MAY 1960	W.M.	17
MAY 1960	W.M.	18	MAY 1960	W.M.	18	MAY 1960	W.M.	18	MAY 1960	W.M.	18
MAY 1960	W.M.	19	MAY 1960	W.M.	19	MAY 1960	W.M.	19	MAY 1960	W.M.	19
MAY 1960	W.M.	20	MAY 1960	W.M.	20	MAY 1960	W.M.	20	MAY 1960	W.M.	20

CAPITOL CT. WELL FIELD  
PUMP STATION  
AREA 7.40 ACRES

Contour Interval - 20 Feet  
4" or Smaller  
6" or Larger  
Village Boundary  
SCALE: 1"=400'

LEGEND  
Zone Boundary  
Valve  
Hydrant  
Town Boundary

APPROVED:  
CHIEF ENGR.  
GENL. MGR.

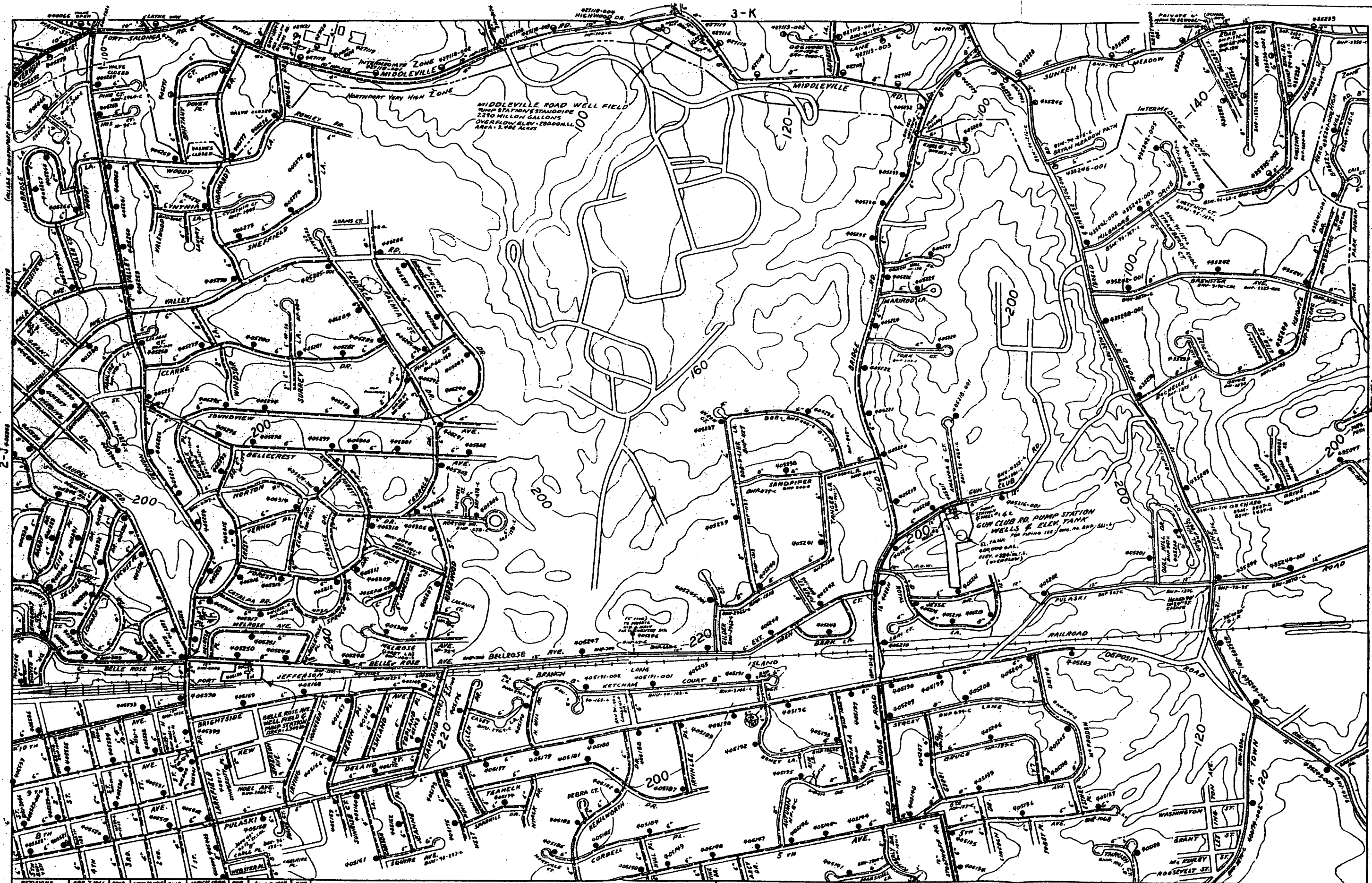
SUFFOLK COUNTY WATER AUTHORITY  
SMITHTOWN DISTRICT  
KINGS PARK & INDIAN HEAD  
TOWN OF SMITHTOWN  
DISTRIBUTION SYSTEM

VERY HIGH, HIGH & INTERMEDIATE ZONES  
JULY 25, 1960 4-H









REVISIONS	DATE	BY	CHKD	APPD	REASON
1	APR 3, 1964	RMP	AMV	SLDS	RMP
2	APR 3, 1964	RMP	AMV	SLDS	RMP
3	APR 3, 1964	RMP	AMV	SLDS	RMP
4	APR 3, 1964	RMP	AMV	SLDS	RMP
5	APR 3, 1964	RMP	AMV	SLDS	RMP
6	APR 3, 1964	RMP	AMV	SLDS	RMP
7	APR 3, 1964	RMP	AMV	SLDS	RMP
8	APR 3, 1964	RMP	AMV	SLDS	RMP
9	APR 3, 1964	RMP	AMV	SLDS	RMP
10	APR 3, 1964	RMP	AMV	SLDS	RMP
11	APR 3, 1964	RMP	AMV	SLDS	RMP
12	APR 3, 1964	RMP	AMV	SLDS	RMP
13	APR 3, 1964	RMP	AMV	SLDS	RMP
14	APR 3, 1964	RMP	AMV	SLDS	RMP
15	APR 3, 1964	RMP	AMV	SLDS	RMP
16	APR 3, 1964	RMP	AMV	SLDS	RMP
17	APR 3, 1964	RMP	AMV	SLDS	RMP
18	APR 3, 1964	RMP	AMV	SLDS	RMP
19	APR 3, 1964	RMP	AMV	SLDS	RMP
20	APR 3, 1964	RMP	AMV	SLDS	RMP

LOW ZONE  
INTERMEDIATE ZONE  
HIGH EVERY HIGH ZONE

Center Interval - 20 Feet  
6" or Smaller  
12" or Larger  
Village Boundary  
SCALE: 1"=400'

LEGEND  
Zone Boundary  
Valve  
Hydrant  
Town Boundary

APPROVED:  
CHIEF ENGR.  
GEN'L MGR.

SUFFOLK COUNTY WATER AUTHORITY  
HUNTINGTON DISTRICT  
EAST NORTHPORT  
TOWN OF HUNTINGTON  
DISTRIBUTION SYSTEM

INTERMEDIATE, HIGH &  
VERY HIGH ZONE  
3-J



REVISIONS	DATE	BY	APP'D	REASON
1	APR 1, 1967	WMP	WMP	INITIAL
2	APR 1, 1968	WMP	WMP	INITIAL
3	APR 1, 1969	WMP	WMP	INITIAL
4	APR 1, 1970	WMP	WMP	INITIAL
5	APR 1, 1971	WMP	WMP	INITIAL
6	APR 1, 1972	WMP	WMP	INITIAL
7	APR 1, 1973	WMP	WMP	INITIAL
8	APR 1, 1974	WMP	WMP	INITIAL
9	APR 1, 1975	WMP	WMP	INITIAL
10	APR 1, 1976	WMP	WMP	INITIAL
11	APR 1, 1977	WMP	WMP	INITIAL
12	APR 1, 1978	WMP	WMP	INITIAL
13	APR 1, 1979	WMP	WMP	INITIAL
14	APR 1, 1980	WMP	WMP	INITIAL
15	APR 1, 1981	WMP	WMP	INITIAL
16	APR 1, 1982	WMP	WMP	INITIAL
17	APR 1, 1983	WMP	WMP	INITIAL
18	APR 1, 1984	WMP	WMP	INITIAL
19	APR 1, 1985	WMP	WMP	INITIAL
20	APR 1, 1986	WMP	WMP	INITIAL
21	APR 1, 1987	WMP	WMP	INITIAL
22	APR 1, 1988	WMP	WMP	INITIAL
23	APR 1, 1989	WMP	WMP	INITIAL
24	APR 1, 1990	WMP	WMP	INITIAL
25	APR 1, 1991	WMP	WMP	INITIAL
26	APR 1, 1992	WMP	WMP	INITIAL
27	APR 1, 1993	WMP	WMP	INITIAL
28	APR 1, 1994	WMP	WMP	INITIAL
29	APR 1, 1995	WMP	WMP	INITIAL
30	APR 1, 1996	WMP	WMP	INITIAL
31	APR 1, 1997	WMP	WMP	INITIAL
32	APR 1, 1998	WMP	WMP	INITIAL
33	APR 1, 1999	WMP	WMP	INITIAL
34	APR 1, 2000	WMP	WMP	INITIAL
35	APR 1, 2001	WMP	WMP	INITIAL
36	APR 1, 2002	WMP	WMP	INITIAL
37	APR 1, 2003	WMP	WMP	INITIAL
38	APR 1, 2004	WMP	WMP	INITIAL
39	APR 1, 2005	WMP	WMP	INITIAL
40	APR 1, 2006	WMP	WMP	INITIAL
41	APR 1, 2007	WMP	WMP	INITIAL
42	APR 1, 2008	WMP	WMP	INITIAL
43	APR 1, 2009	WMP	WMP	INITIAL
44	APR 1, 2010	WMP	WMP	INITIAL
45	APR 1, 2011	WMP	WMP	INITIAL
46	APR 1, 2012	WMP	WMP	INITIAL
47	APR 1, 2013	WMP	WMP	INITIAL
48	APR 1, 2014	WMP	WMP	INITIAL
49	APR 1, 2015	WMP	WMP	INITIAL
50	APR 1, 2016	WMP	WMP	INITIAL
51	APR 1, 2017	WMP	WMP	INITIAL
52	APR 1, 2018	WMP	WMP	INITIAL
53	APR 1, 2019	WMP	WMP	INITIAL
54	APR 1, 2020	WMP	WMP	INITIAL
55	APR 1, 2021	WMP	WMP	INITIAL
56	APR 1, 2022	WMP	WMP	INITIAL
57	APR 1, 2023	WMP	WMP	INITIAL
58	APR 1, 2024	WMP	WMP	INITIAL
59	APR 1, 2025	WMP	WMP	INITIAL
60	APR 1, 2026	WMP	WMP	INITIAL
61	APR 1, 2027	WMP	WMP	INITIAL
62	APR 1, 2028	WMP	WMP	INITIAL
63	APR 1, 2029	WMP	WMP	INITIAL
64	APR 1, 2030	WMP	WMP	INITIAL
65	APR 1, 2031	WMP	WMP	INITIAL
66	APR 1, 2032	WMP	WMP	INITIAL
67	APR 1, 2033	WMP	WMP	INITIAL
68	APR 1, 2034	WMP	WMP	INITIAL
69	APR 1, 2035	WMP	WMP	INITIAL
70	APR 1, 2036	WMP	WMP	INITIAL
71	APR 1, 2037	WMP	WMP	INITIAL
72	APR 1, 2038	WMP	WMP	INITIAL
73	APR 1, 2039	WMP	WMP	INITIAL
74	APR 1, 2040	WMP	WMP	INITIAL
75	APR 1, 2041	WMP	WMP	INITIAL
76	APR 1, 2042	WMP	WMP	INITIAL
77	APR 1, 2043	WMP	WMP	INITIAL
78	APR 1, 2044	WMP	WMP	INITIAL
79	APR 1, 2045	WMP	WMP	INITIAL
80	APR 1, 2046	WMP	WMP	INITIAL
81	APR 1, 2047	WMP	WMP	INITIAL
82	APR 1, 2048	WMP	WMP	INITIAL
83	APR 1, 2049	WMP	WMP	INITIAL
84	APR 1, 2050	WMP	WMP	INITIAL
85	APR 1, 2051	WMP	WMP	INITIAL
86	APR 1, 2052	WMP	WMP	INITIAL
87	APR 1, 2053	WMP	WMP	INITIAL
88	APR 1, 2054	WMP	WMP	INITIAL
89	APR 1, 2055	WMP	WMP	INITIAL
90	APR 1, 2056	WMP	WMP	INITIAL
91	APR 1, 2057	WMP	WMP	INITIAL
92	APR 1, 2058	WMP	WMP	INITIAL
93	APR 1, 2059	WMP	WMP	INITIAL
94	APR 1, 2060	WMP	WMP	INITIAL
95	APR 1, 2061	WMP	WMP	INITIAL
96	APR 1, 2062	WMP	WMP	INITIAL
97	APR 1, 2063	WMP	WMP	INITIAL
98	APR 1, 2064	WMP	WMP	INITIAL
99	APR 1, 2065	WMP	WMP	INITIAL
100	APR 1, 2066	WMP	WMP	INITIAL
101	APR 1, 2067	WMP	WMP	INITIAL
102	APR 1, 2068	WMP	WMP	INITIAL
103	APR 1, 2069	WMP	WMP	INITIAL
104	APR 1, 2070	WMP	WMP	INITIAL
105	APR 1, 2071	WMP	WMP	INITIAL
106	APR 1, 2072	WMP	WMP	INITIAL
107	APR 1, 2073	WMP	WMP	INITIAL
108	APR 1, 2074	WMP	WMP	INITIAL
109	APR 1, 2075	WMP	WMP	INITIAL
110	APR 1, 2076	WMP	WMP	INITIAL
111	APR 1, 2077	WMP	WMP	INITIAL
112	APR 1, 2078	WMP	WMP	INITIAL
113	APR 1, 2079	WMP	WMP	INITIAL
114	APR 1, 2080	WMP	WMP	INITIAL
115	APR 1, 2081	WMP	WMP	INITIAL
116	APR 1, 2082	WMP	WMP	INITIAL
117	APR 1, 2083	WMP	WMP	INITIAL
118	APR 1, 2084	WMP	WMP	INITIAL
119	APR 1, 2085	WMP	WMP	INITIAL
120	APR 1, 2086	WMP	WMP	INITIAL
121	APR 1, 2087	WMP	WMP	INITIAL
122	APR 1, 2088	WMP	WMP	INITIAL
123	APR 1, 2089	WMP	WMP	INITIAL
124	APR 1, 2090	WMP	WMP	INITIAL
125	APR 1, 2091	WMP	WMP	INITIAL
126	APR 1, 2092	WMP	WMP	INITIAL
127	APR 1, 2093	WMP	WMP	INITIAL
128	APR 1, 2094	WMP	WMP	INITIAL
129	APR 1, 2095	WMP	WMP	INITIAL
130	APR 1, 2096	WMP	WMP	INITIAL
131	APR 1, 2097	WMP	WMP	INITIAL
132	APR 1, 2098	WMP	WMP	INITIAL
133	APR 1, 2099	WMP	WMP	INITIAL
134	APR 1, 2100	WMP	WMP	INITIAL

LOW ZONE  
INTERMEDIATE ZONE  
HIGH & VERY HIGH ZONE

Contour Interval - 20 Feet  
6" or smaller  
12" or larger  
Village Boundary  
SCALE 1"=400'

LEGEND  
Zone Boundary  
Valve Hydrant  
Town Boundary

APPROVED:  
CHIEF ENGR.  
GENL. MGR.

SUFFOLK COUNTY WATER AUTHORITY  
HUNTINGTON DISTRICT  
EAST NORTHPORT & COMMACK  
TOWN OF  
DISTRIBUTION SYSTEM

VERY HIGH  
ZONE  
3-I





REVISIONS	DATE	BY	CHKD	APP'D	REASON
1	APR 3, 1968	WMP	WMP	WMP	INITIAL
2	APR 1, 1969	WMP	WMP	WMP	REVISION
3	APR 2, 1970	WMP	WMP	WMP	REVISION
4	APR 1, 1971	WMP	WMP	WMP	REVISION
5	MAY 1, 1972	WMP	WMP	WMP	REVISION
6	APR 24, 1980	WMP	WMP	WMP	REVISION
7	MAY 1, 1981	WMP	WMP	WMP	REVISION
8	APR 15, 1983	WMP	WMP	WMP	REVISION
9	MAY 1, 1985	WMP	WMP	WMP	REVISION

DATE	BY	CHKD	APP'D	REASON
APR 3, 1968	WMP	WMP	WMP	INITIAL
APR 1, 1969	WMP	WMP	WMP	REVISION
APR 2, 1970	WMP	WMP	WMP	REVISION
APR 1, 1971	WMP	WMP	WMP	REVISION
MAY 1, 1972	WMP	WMP	WMP	REVISION
APR 24, 1980	WMP	WMP	WMP	REVISION
MAY 1, 1981	WMP	WMP	WMP	REVISION
APR 15, 1983	WMP	WMP	WMP	REVISION
MAY 1, 1985	WMP	WMP	WMP	REVISION

LOW ZONE  
INTERMEDIATE ZONE  
HIGH ZONE

Contour Interval - 20 Feet  
6" or Smaller  
12" or Larger  
Village Boundary

SCALE: 1" = 400'

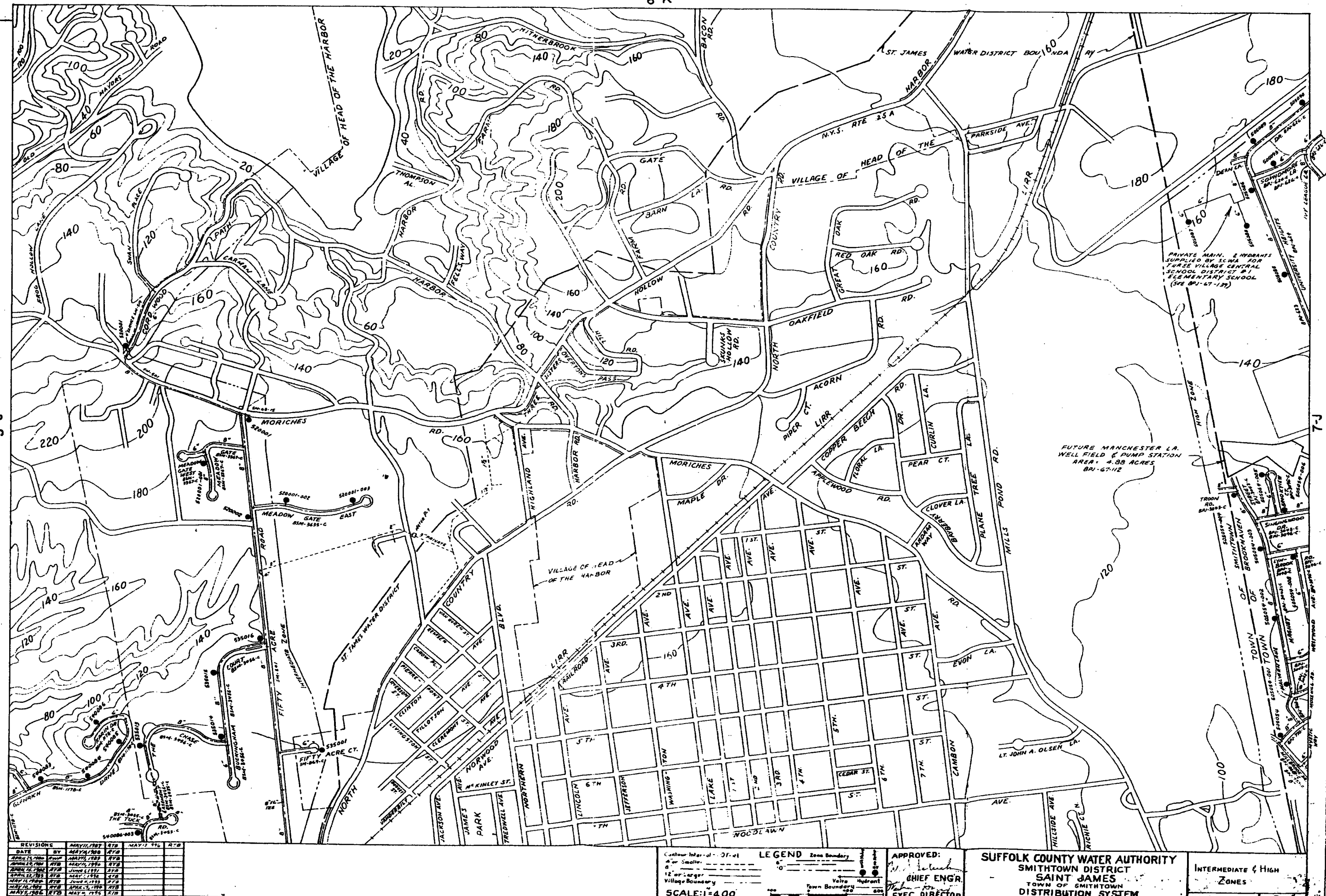
APPROVED:  
CHIEF ENGR.  
GENL MGR.

SUFFOLK COUNTY WATER AUTHORITY  
HUNTINGTON DISTRICT  
COMMACK  
TOWN OF HUNTINGTON  
DISTRIBUTION SYSTEM

High Zone &  
VERY High Zone

3-H





DATE	BY	REVISIONS	DATE	BY	REVISIONS
APRIL 15, 1980	RTB	APRIL 15, 1980	RTB		
APRIL 15, 1980	RTB	APRIL 15, 1980	RTB		
APRIL 15, 1980	RTB	APRIL 15, 1980	RTB		
APRIL 15, 1980	RTB	APRIL 15, 1980	RTB		
APRIL 15, 1980	RTB	APRIL 15, 1980	RTB		
APRIL 15, 1980	RTB	APRIL 15, 1980	RTB		
APRIL 15, 1980	RTB	APRIL 15, 1980	RTB		
APRIL 15, 1980	RTB	APRIL 15, 1980	RTB		
APRIL 15, 1980	RTB	APRIL 15, 1980	RTB		

Contour Interval - 20 ft.  
 4' or Smaller  
 8' or Smaller  
 12' or Larger  
 Village Boundary  
 SCALE: 1" = 400'

## LEGEND

Zone Boundary  
 Town Boundary  
 Valve  
 Hydrant

APPROVED:  
 CHIEF ENGR.  
 EXEC. DIRECTOR

SUFFOLK COUNTY WATER AUTHORITY  
 SMITHTOWN DISTRICT  
 SAINT JAMES  
 TOWN OF SMITHTOWN  
 DISTRIBUTION SYSTEM

INTERMEDIATE & HIGH  
 ZONES

FEB. 8, 1980 6-J

## **DESCRIPTION OF HEADER FILE RETRIEVAL INFORMATION**

**WELL** = New York State well identification number (ex. K 1234. 1)

**AQUIFER** = Code of aquifer in which well is screened (ex. 112GLCLU)

**STATION ID** = Unique station identification number

**LAT-LONG** = Latitude and longitude of well

**SQ** = Sequence number

**LSD** = Land surface elevation at well, in feet from NGVD of 1929

**MP** = Measuring point elevation of well, in feet from NGVD of 1929

**DEPTH** = Total depth of well casing, in feet below land surface

**SCREEN TOP** = Depth to top of screen, in feet below land surface

**SCREEN BOTTOM** = Depth to bottom of screen, in feet below land surface

**MAX DRILL** = Maximum depth well was drilled, in feet below land surface

**TOWN** = Town code of well

**COMM** = Community code of well

**SWDST** = Sewer district code of well

**ZON** = Physiographic zone code of well

**HGSTRM** = Hagstrom Atlas coordinate of well

**WELUS** = Primary and secondary well use code of well

## **AQUIFER CODES**

112GLCLU = Upper glacial aquifer

112GRDR = Gardiners Clay

112JMCO = Jameco aquifer

112PGFG = Port Washington confining unit

112PGQF = Port Washington aquifer

112SMTN = Smithtown Clay

11220CL = 20-Foot Clay

211LLYD = Lloyd aquifer

211MGTY = Magothy aquifer

211MMGD = Monmouth Greensand

211RNCF = Raritan confining unit

400BCPX = Basement complex (bedrock)

999MMMMM = More than one unit

## **WELL USE CODES**

**1 = Observation**

**2 = Recharge**

**3 = Test**

**4 = Well not used**

**5 = Withdrawl, unspecified**

**6 = Destroyed**

**7 = Public supply**

**8 = Fire well**

**9 = Not found last time visited**

**D = Domestic supply**

**P = Plugged**

**COUNTY LETTER CODES**  
**(for N.Y.S. well numbers)**  
**(ex.- K 1234. 1)**

S = Suffolk

N = Nassau

Q = Queens

K = Kings

R = Richmond

B = Bronx

M = Manhattan

**MODIFYING LETTERS**  
**(for N.Y.S. well numbers)**  
**(ex.- K 1234. 1T)**

D = Diffusion (injection) well

T = Test hole

A-Z (except letters D or T) = Replacement well with new location

## **HAGSTROM ATLAS LOCATION DESCRIPTION**

**Column 1 = County letter (ex.- ND1462)**

**Column 2 = Map coordinate letter (ex.- ND1462)**

**Column 3-4 = Map coordinate number (ex.- ND1462)**

**Column 5 = Coordinate box subdivision, east-west direction (ex.- ND1462)**

**Column 6 = Coordinate box subdivision, north-south direction (ex.- ND1462)**

**Subdivisions run from 0-9, starting from the upper left corner**

### **ZONE CODES**

**B = Barrier beach**

**N = North fork**

**S = South fork**

## **SEWER DISTRICT CODES**

### **Nassau County**

- 1 = District #1 (Inwood)
- 2 = District #2 (Bay Park Plant)
- 3 = District #3 (Ceder Creek Plant)

### **Suffolk County**

- 1 = Port Jefferson
- 2 = Holbrook
- 3 = Southwest Sewer District
- 4 = Birchwood/North Shore
- 5 = Strathmore/Huntington
- 6 = Kings Park
- 7 = Medford
- 8 = Strathmore Ridge
- 9 = College Park
- 10 = Stony Brook
- 11 = Selden
- 14 = Parkland
- 15 = Nob Hill



## **TOWN CODES**

**1 = Hempstead**

**2 = North Hempstead**

**3 = Oyster Bay**

**4 = Babylon**

**5 = Brookhaven**

**6 = East Hampton**

**7 = Huntington**

**8 = Islip**

**9 = Riverhead**

**10 = Shelter Island**

**11 = Smithtown**

**12 = Southampton**

**13 = Southold**

	WELL		AQUIFER	STATION	ID	LAT-LONG	SG	LSD	MP	DEPTH	TOP	BOTTOM	DRILL	TOWN	COMM	SWDST	ZON	HGSTRM	WELUS
1 S	45.	1	112GLCLU	404940073165201	4049400731652	01	160.0	160.87		129	0	0	0	11	169	0		SJ 900	5
2 S	48.	1	211LLYD	405329073184301	4053300731848	01	123.7	125.25		737	695	728	0	7	152	0		SE 867	5
3 S	49.	1	211LLYD	405327073184301	4053260731844	01	132.0	133.16		763	747	762	0	7	152	0		SE 868	5
4 S	50.	1		405327073184401	4053270731844	01	2.0	141.57		358	0	0	0	0	0	0		SE 887	
5 S	51.	1	211MGTY	405302073152901	4053020731529	01	180.0	0.00		553	0	0	553	11	174	0		SF1067	7
6 S	53.	1	112GLCLU	405411073153201	4054110731532	01	62.0	0.00		194	0	0	0	11	174	0		SE1088	
7 S	64.	1	112GLCLU	405136073125101	4051360731251	01	20.0	0.00		205	0	0	0	11	182	0		SH1183	5
8 S	65.	1	112GLCLU	405046073120601	4050460731200	01	33.0	0.00		155	0	0	142	11	182	0		SJ1201	7
9 S	68.	1	211MGTY	405355073143601	4053550731436	01	66.0	56.98		414	0	0	0	11	174	0		SF1131	5
10 S	70.	1		405340073143501	4053400731435	01	0.0	120.36		478	0	0	0	0	0	0		SF1123	
11 S	71.	1		405339073144001	4053390731440	01	0.0	0.00		0	0	0	0	0	0	0		SF1133	5
12 S	72.	1	211MGTY	405342073143301	4053420731433	01	121.0	0.00		500	473	487	0	11	174	0		SH1164	
13 S	308.	1	112GLCLU	405128073125901	4051280731259	01	60.0	0.00		168	0	0	0	11	182	0		SG1274	5
14 S	317.	1	112GLCLU	405301073114701	4053010731147	01	120.0	0.00		212	0	0	0	11	178	0		SF1232	5
15 S	318.	1	112GLCLU	405414073130401	4054140731304	01	10.0	0.00		146	0	0	0	11	178	0			
16 S	320.	1	112GLCLU	405403073110401	4054030731104	01	60.0	0.00		117	0	0	0	11	178	0		SF1347	5
17 S	852.	1	112GLCLU	405157073112301	4051570731123	01	135.0	0.00		143	133	143	0	11	182	0		SH1273	5
18 S	912.	1	211MGTY	405308073123101	4053080731231	01	90.0	0.00		416	399	415	0	11	181	0		SG1231	5
19 S	2406.	1	112GLCLU	405131073111401	4051310731114	01	100.0	0.00		143	0	0	0	11	182	0		SH1276	5
20 S	2426.	1	112GLCLU	405355073115501	4053550731155	01	80.0	0.00		137	134	137	0	11	178	0		SF1286	5
21 S	2466.	1	112GLCLU	405338073130601	4053380731306	01	60.0	0.00		153	150	153	0	11	181	0		SF1216	5
22 S	2567.	1	112GLCLU	405231073142001	4052310731420	01	140.0	0.00		148	143	148	0	11	174	0		SG1113	5
23 S	2752.	1	112GLCLU	405417073121501	4054170731215	01	50.0	0.00		213	209	213	0	11	178	0		SF1273	5
24 S	3354.	1	112GLCLU	405357073170801	4053570731708	01	125.0	0.00		233	230	233	233	11	171	0		SE 986	7
25 S	3369.	1	112GLCLU	405142073130201	4051420731302	01	85.0	0.00		118	0	118	0	11	182	0		SH1172	5
26 S	3514.	1	112GLCLU	405031073181201	4050310731812	01	153.6	153.78		98	0	0	0	0	0	0		SH 841	1
27 S	3639.	1		405330073185001	4053300731850	01	132.0	0.00		467	423	463	467	7	152	0		SE 877	5
28 S	3761.	1	112GLCLU	405328073170601	4053280731706	01	160.0	0.00		150	0	0	0	11	174	0		SF 970	5
29 S	3800.	1	112GLCLU	405301073153001	4053010731529	01	0.0	0.00		0	0	0	0	0	174	0		SF1067	7
30 S	4184.	1	112GLCLU	405032073182801	4050340731618	01	143.0	139.91		162	136	162	0	11	169	0		SH 954	7
31 S	4268.	1		405248073171301	4052480731713	01	110.0	110.97		74	0	0	0	0	0	0		SF 955	1
32 S	4532.	1	112GLCLU	405354073172501	4053540731725	01	150.0	0.00		350	341	350	0	11	174	0		SE 976	5
33 S	4583.	1	211MGTY	405120073172101	4051200731721	01	165.0	0.00		550	480	525	0	7	169	0		SG 917	5
34 S	4615.	1	112GLCLU	405006073174601	4050060731746	01	130.0	0.00		148	123	143	0	7	169	0		SH 865	5
35 S	4900.	1	112GLCLU	405438073171501	4054380731715	01	130.0	0.00		229	219	229	0	11	174	0		SE 991	5
36 S	4945.	1	112GLCLU	405259073133501	4052590731335	01	150.0	0.00		223	219	223	0	11	174	0		SG1171	5
37 S	5049.	1	112GLCLU	405254073130601	4052540731306	01	160.0	0.00		0	157	160	0	11	174	0		SG1192	
38 S	8121.	1	112GLCLU	405134073185801	4051340731858	01	180.0	0.00		327	284	327	0	7	169	0		SG 822	5
39 S	8912.	1		405121073111901	4051210731119	01	59.0	59.30		28	0	0	0	0	0	0		SH1268	
40 S	9011.	1	112GLCLU	405107073164301	4051070731643	01	140.0	0.00		199	160	166	0	7	169	0		SG 949	5
41 S	9771.	1	112GLCLU	405046073161401	4050480731615	01	140.0	0.00		147	126	146	151	11	169	0		SH 963	7
42 S	10902.	1	112GLCLU	405215073161901	4052150731619	01	140.0	0.00		438	0	0	0	11	174	0		SG 991	5
43 S	11810.	1	112GLCLU	405046073120602	4050460731202	05	35.0	0.00		164	134	164	296	11	182	0		SJ1201	7
44 S	11891.	1	112GLCLU	405054073151001	4050540731510	01	70.0	68.14		119	86	108	328	11	182	0		SH1024	7
45 S	12248.	1	112GLCLU	405301073153002	4053010731530	02	0.0	0.00		0	0	0	0	0	0	0		SF1067	
46 S	13248.	1	112GLCLU	405302073153001	4053020731530	01	163.0	0.00		164	139	164	196	11	174	0		SF1067	6
47 S	14326.	1T	211MGTY	404919073142701	4049200731427	01	70.0	0.00		225	141	225	0	11	182	0		SJ1038	7
48 S	14609.	1		405000073170501	4050000731705	01	0.0	0.00		0	0	0	0	0	0	0		SH 897	
49 S	14776.	1	112GLCLU	405459073163401	4054590731634	01	60.0	0.00		96	86	92	0	11	174	0		SD1049	5
50 S	15338.	1T	112GLCLU	405015073170101	4050150731701	01	150.0	0.00		170	0	0	0	11	169	0		SH 906	3

WELL	AQUIFER	STATION	ID	LAT-LONG	SQ	LSD	MP	DEPTH	--SCREEN--		MAX DRILL	TOWN	COMM	SWDST	ZON	HGSTRM	WELUS
									TOP	BOTTOM							
51 S 15427.	1	112GLCLU	405002073164501	4050020731645	01	140.0	0.00	137	132	137	0	11	169	0		SH 918	5
52 S 15514.	1	211MGTY	405308073175101	4053080731751	01	200.0	199.60	595	533	593	608	7	137	0		SF 921	7
53 S 15515.	1	112GLCLU	405307073175001	4053080731751	02	200.0	0.00	356	316	356	369	7	149	0		SF 921	7
54 S 15622.	1	211MGTY	405250073180801	4052500731808	01	205.0	204.81	458	437	457	0	7	149	0		SF 903	1
55 S 15899.	1T		405302073152501	4053020731525	01	0.0	0.00	0	0	0	0	0	0	0		SF1067	
56 S 15923.	1	112GLCLU	405134073155901	4051450731554	01	140.0	0.00	264	148	263	362	11	169	0		SG1006	7
57 S 16129.	1	211MGTY	405301073153201	4053020731531	01	160.0	0.00	550	411	547	0	11	174	0		SF1067	7
58 S 16264.	1		405229073101801	4052290731018	01	0.0	0.00	0	0	0	0	0	0	0		SH1341	
59 S 16872.	1	112GLCLU	405326073184403	4053260731844	03	0.0	0.00	0	0	0	0	0	0	0		SE 887	1
60 S 16881.	1	112GLCLU	405034073140401	4050340731404	01	58.0	57.66	47	0	0	0	11	169	0		SH1089	1
61 S 16883.	1	112GLCLU	405355073174801	4053550731748	01	56.8	56.41	34	0	0	0	0	0	0		SE 945	1
62 S 17538.	1		405326073142001	4053260731420	01	0.0	0.00	0	0	0	0	0	0	0		SF1136	
63 S 19057.	1	211MGTY	405040073175801	4050400731758	01	150.0	152.50	681	604	676	0	7	169	0		SH 861	7
64 S 20369.	1	211MGTY	404936073152501	4049360731525	01	120.0	0.00	312	260	310	312	11	169	0		SJ 984	7
65 S 20689.	1	211MGTY	405045073120401	4050470731204	01	35.0	0.00	596	516	595	608	11	182	0		SJ1201	7
66 S 21134.	1	211MGTY	405108073174201	4051080731742	01	160.0	0.00	547	489	540	680	7	169	0		SG 887	7
67 S 22362.	1	112GLCLU	404955073170401	4049570731704	01	155.0	156.76	315	243	311	604	11	169	0		SH 898	7
68 S 22471.	1	211MGTY	404922073162901	4049220731629	01	165.0	0.00	383	312	381	602	7	169	0		SJ 914	7
69 S 23186.	1	211MGTY	405251073142801	4052510731427	01	160.0	0.00	491	414	490	650	11	174	0		SG1110	7
70 S 23252.	1	112GLCLU	404954073114801	4049540731148	01	65.0	0.00	0	153	163	0	11	196	0		SJ1208	
71 S 23631.	1	211MGTY	405047073120601	4050470731207	01	40.0	43.91	623	494	595	623	11	182	0		SJ1201	7
72 S 23715.	1	112GLCLU	404955073170402	4049550731704	02	155.0	0.00	340	238	310	340	11	169	0		SH 898	7
73 S 23832.	1	211MGTY	404922073162701	4049220731628	01	165.0	170.00	405	318	402	409	7	169	0		SJ 914	7
74 S 23999.	1	211MGTY	405018073181701	4050180731817	01	160.0	0.00	704	535	607	0	7	169	0		SH 833	5
75 S 24545.	1	211MGTY	405248073142901	4052490731429	01	160.0	158.00	512	434	511	553	11	174	0		SG1110	7
76 S 25776.	1	211MGTY	405306073175201	4053080731752	01	200.0	203.51	586	520	583	604	7	149	0		SF 921	7
77 S 27192.	1	211MGTY	405301073153202	4053010731532	02	167.0	168.68	474	405	466	555	11	174	0		SF1057	7
78 S 29277.	1	112GLCLU	405002073150601	4050020731506	01	115.0	0.00	112	108	112	0	11	182	0		SJ1011	5
79 S 30729.	1T	112GLCLU	405417073112101	4054170731121	01	100.0	0.00	349	314	349	0	11	182	0		SF1335	5
80 S 31711.	1T	211MGTY	405143073110001	4051430731100	01	125.0	0.00	600	0	0	0	11	182	0		SH1295	3
81 S 32287.	1	211MGTY	405113073105901	4051450731059	01	124.8	0.00	290	220	290	298	11	182	0		SH1295	7
82 S 33006.	1	211MGTY	405132073155901	4051430731554	01	147.0	141.94	504	436	503	512	11	169	0		SG1006	7
83 S 33287.	1		405143073105802	4051430731058	02	0.0	0.00	0	0	0	0	0	0	0		SH1295	
84 S 34460.	1	211MGTY	405246073142801	4052500731429	01	153.0	149.21	599	531	596	0	11	174	0		SG1110	7
85 S 34733.	1	211MGTY	405143073105801	4051440731057	01	126.0	118.99	421	350	421	428	11	182	0		SH1295	7
86 S 35939.	1	211MGTY	405140073190801	4051390731904	01	171.0	175.41	533	468	530	622	7	149	0		SG 821	7
87 S 36140.	1	112GLCLU	404931073140601	4049310731406	01	48.0	47.93	41	0	0	0	11	182	0		SJ1057	1
88 S 36141.	1	112GLCLU	405003073155301	4050030731553	01	138.0	136.71	112	109	112	112	0	0	0		SH 969	1
89 S 36791.	1	211MGTY	405014073161401	4050470731615	01	140.0	137.52	674	534	670	680	7	169	0		SH 963	7
90 S 36976.	1	211MGTY	404923073162801	4049230731628	01	160.0	0.00	418	331	418	458	0	169	0		SJ 913	7
91 S 37276.	1	112GLCLU	404918073133001	4049180731330	01	40.0	0.00	400	349	399	0	11	196	0		SK1080	
92 S 37351.	1	211MGTY	405141073191001	4051380731905	01	171.0	165.76	609	515	605	663	7	149	0		SG 821	7
93 S 39333.	1T	211MGTY	405208073131402	4052080731314	02	64.0	64.00	658	610	632	0	11	0	0		SG1178	5
94 S 39518.	1T	211MGTY	405118073123801	4051180731238	01	76.0	76.00	725	590	690	0	11	0	0		SH1186	3
95 S 40333.	1	112GLCLU	405236073170901	4052360731709	01	110.0	110.00	525	515	525	0	11	174	0		SF 957	5
96 S 40710.	1	112GLCLU	405207073131401	4052100731314	01	70.0	65.00	463	367	457	468	11	182	0		SG1178	7
97 S 40711.	1	112GLCLU	405209073131401	4052080731314	01	70.0	65.00	273	223	273	0	11	182	0		SG1178	7
98 S 40842.	1		405206073153001	4052060731530	01	91.6	91.60	76	0	0	0	0	0	0		SG1034	1
99 S 40842.	2		405206073153002	4052060731530	02	91.6	100.38	63	60	63	0	0	0	0		SG1034	1
100 S 40843.	1	112GLCLU	405124073111501	4051240731115	01	66.0	65.99	44	41	44	0	11	182	0		SH1267	1

WELL	AQUIFER	STATION	ID	LAT-LONG	SQ	LSD	MP	DEPTH	--SCREEN--		MAX DRILL	TOWN	COMM	SWDST	ZON	HGSTRM	WELUS
									TOP	BOTTOM							
101 S 41344.	1	211MGTY	404919073142801	4049190731428	01	79.0	78.70	693	0	0	693	11	196	0		SJ1038	7
102 S 42053.	1T	211MGTY	405032073140701	4050320731407	01	50.0	50.00	713	0	0	0	11	196	0		SH1089	3
103 S 42054.	1T	211MGTY	405043073122901	4050430731229	01	40.0	40.00	723	0	0	0	11	182	0		SJ1180	3
104 S 42270.	1	211MGTY	405119073123700	4051190731237	01	76.0	75.00	649	575	649	0	11	182	0		SH1189	7
105 S 42473.	1	211MGTY	405119073123702	4051190731236	02	76.0	61.79	649	574	645	725	8	205	0		SH1186	7
106 S 44774.	1	112GLCLU	404920073142801	4049200731428	01	71.6	0.00	294	199	290	294	0	0	0		SJ1038	7
107 S 45207.	1	112GLCLU	405132073181401	4051320731814	01	165.0	163.42	146	134	144	0	7	169	0		SG 863	1
108 S 45210.	1	112GLCLU	404945073174501	4049450731745	01	130.2	128.27	109	97	107	0	7	169	0		SH 858	1
109 S 45402.	1	112GLCLU	405259073162201	4052590731622	01	161.0	159.36	170	158	168	175	0	0	0		SF1015	1
110 S 45594.	1T	112GLCLU	404920073150901	4049200731509	01	105.0	102.37	85	73	83	0	11	183	0		SJ 996	1
111 S 46964.	1	112GLCLU	405225073152200	4052250731522	01	123.0	121.60	114	90	100	0	0	0	0		SG1052	1
112 S 46965.	1	112GLCLU	405230073164400	4052300731644	01	166.0	164.66	152	138	148	0	0	0	0		SF 979	1
113 S 47157.	1	112GLCLU	404933073134201	4049330731342	01	45.0	46.92	25	12	22	25	0	0	0		SJ1087	1
114 S 47673.	1	112GLCLU	405142073105801	4051440731058	01	109.0	0.00	279	215	276	0	0	0	0		SH1295	7
115 S 49439.	1	112GLCLU	405353073182201	4053530731822	01	120.0	0.00	707	0	0	0	0	0	0		SE 915	
116 S 49899.	1	112GLCLU	404952073120301	4049520731203	01	55.0	54.62	27	12	17	0	0	0	0		SJ1188	
117 S 50506.	1	112GLCLU	405231073123501	4052310731235	01	79.0	79.08	70	66	70	0	0	179	0		SG1216	6
118 S 50507.	1	112GLCLU	405309073125401	4053090731254	01	90.3	90.31	0	0	0	0	11	181	0		SG1211	1
119 S 50508.	1		405318073134101	4053180731341	01	0.0	36.61	0	0	0	0	0	0	0		SF1178	1
120 S 50508.	2	112GLCLU	405318073134102	4053180731341	02	0.0	0.00	11	7	11	0	0	0	0		SF1178	6
121 S 50509.	1	112GLCLU	405318073134103	4053180731341	03	0.0	36.51	50	46	50	0	0	0	0		SF1178	6
122 S 50512.	1	112GLCLU	405146073141001	4051460731410	01	84.5	84.33	0	0	0	0	11	182	0		SG1109	1
123 S 50513.	1	112GLCLU	405100073152601	4051000731526	01	93.0	92.94	61	57	61	0	11	169	0		SH1013	1
124 S 51265.	1	112GLCLU	405147073125601	4051470731256	01	70.0	72.30	72	56	61	0	0	0	0		SH1181	
125 S 52314.	1	112GLCLU	404904073151401	4049040731514	01	129.8	131.80	91	76	81	0	0	0	0		SJ 988	1
126 S 52434.	1	112GLCLU	405426073121601	4054260731216	01	15.0	0.00	73	67	72	0	11	178	0		SF1282	
127 S 53360.	1	211MGTY	405032073162802	4050340731618	02	141.0	137.90	703	551	667	0	0	0	0		SH 954	7
128 S 53361.	1	211MGTY	405133073155901	4051430731556	01	148.0	143.07	521	437	517	0	0	169	0		SG1006	7
129 S 53747.	1	211MGTY	405140073191001	4051380731902	01	171.0	0.00	453	370	448	0	0	0	0		SG 821	7
130 S 54162.	1	112GLCLU	405359073182801	4053590731828	01	151.0	0.00	543	470	540	0	0	0	0		SE 914	7
131 S 57483.	1	112GLCLU	405112073120001	4051120731200	01	0.0	55.74	46	30	38	0	0	0	0		SH1228	6
132 S 57484.	1	112GLCLU	405123073125101	4051230731251	01	15.5	15.03	19	15	19	0	0	0	0		SH1175	
133 S 57485.	1	112GLCLU	405101073123901	4051010731239	01	66.0	66.60	58	54	58	0	0	0	0		SH1178	
134 S 57488.	1	112GLCLU	405048073122801	4050480731228	01	30.0	29.64	0	0	0	0	0	0	0		SJ1180	
135 S 57489.	1	112GLCLU	405047073132201	4050470731322	01	0.0	70.66	56	52	56	0	0	0	0		SH1138	1
136 S 58708.	1	211MGTY	404938073152701	4049360731525	02	132.0	124.70	423	329	389	0	0	0	0		SJ 984	7
137 S 63930.	1	112GLCLU	405333073131101	4053330731311	01	0.0	0.00	0	0	0	0	0	0	0		SF1207	1
138 S 63966.	1	211MGTY	405053073150901	4050530731509	01	79.0	69.03	653	560	650	0	11	169	0		SH1034	7
139 S 64062.	1	211MGTY	405301073153203	4053020731534	03	169.0	161.87	639	521	636	0	11	174	0		SF1057	7
140 S 65602.	1	112GLCLU	405030073180601	4050300731806	01	146.0	145.81	96	91	96	0	7	169	0		SH 852	1
141 S 65607.	1	112GLCLU	405003073155201	4050030731552	01	138.0	137.72	102	97	102	0	11	169	0		SH 969	1
142 S 66758.	1	211MGTY	405248073142801	4052480731428	01	151.9	0.00	575	0	575	0	0	0	0		SG1110	7
143 S 72271.	1	112GLCLU	405057073170201	4050570731702	01	159.3	0.00	681	0	681	0	0	0	0		SH 920	7
144 S 75737.	1	112GLCLU	405243073153201	4052430731532	01	130.4	132.36	97	92	97	0	11	0	0		SF1059	1
145 S 77894.	1		405326073184402	4053260731844	02	135.0	0.00	495	449	490	503	7	152	0		SE 868	5

90-GU8

10/91

**1990 CENSUS POPULATION AND GROUP QUARTERS COUNTS,  
VACANCY STATUS, AND PERSONS PER UNIT**

**FOR**

**ALL GOVERNMENTAL UNITS**

**Prepared by: New York State, Dept. of Economic Development, State Data Center**

1990 Census Population and Group Quarter Counts, Vacancy Status and Persons Per Occupied Housing Units  
For  
New York State Minor Civil Divisions by County and Places.

Area Name	Total Population	Total Group Quarters Population	Institutional Group Quarters Population	Percent Total Group Quarters Population	Total Housing Units	Total Vacant Housing Units	Percent Vacant Housing Units	Persons Per Occupied Housing Units
Suffolk County.....	1,321,864	29,394	16,882	2.22	481,317	56,598	11.76	3.04
Babylon town.....	202,889	2,937	1,471	1.46	66,819	2,313	3.46	3.10
Amityville village.....	9,286	920	839	9.91	3,300	148	4.48	2.65
Babylon village.....	12,249	200	200	1.63	4,536	180	3.97	2.77
Copiasque CDP.....	20,769	44	0	0.21	7,867	135	1.91	2.99
Deer Park CDP.....	28,840	0	0	0.00	9,616	200	2.08	3.06
East Farmingdale CDP.....	4,510	51	0	1.13	1,495	51	3.41	3.09
Lindenhurst village.....	26,879	141	11	0.52	8,847	247	2.79	3.11
North Amityville CDP.....	13,849	225	0	1.63	4,316	325	7.53	3.41
North Babylon CDP.....	18,081	0	0	0.00	6,125	183	2.99	3.04
North Lindenhurst CDP.....	10,363	8	0	0.08	3,404	81	2.38	3.18
West Babylon CDP.....	42,610	468	394	1.10	13,799	357	2.59	3.12
Whitely Heights CDP.....	5,027	38	7	0.76	1,449	18	1.24	3.49
Wyandanch CDP.....	8,930	71	0	0.79	2,362	143	6.05	4.00
Brookhaven town.....	407,779	10,790	3,700	2.65	140,677	11,585	8.24	3.08
Belle Terre village.....	839	0	0	0.00	280	12	4.29	3.13
Bellport village.....	2,572	0	0	0.00	1,120	130	11.61	2.60
Blue Point CDP.....	4,230	39	19	1.39	1,548	91	5.88	2.86
Brookhaven CDP.....	3,118	171	171	5.48	1,097	87	7.93	2.92
Calverton CDP (pt.).....	1,093	0	0	0.00	420	46	10.95	2.92
Centereach CDP.....	26,730	233	188	0.87	7,801	181	2.32	3.48
Center Moriches CDP.....	5,987	34	31	0.37	2,316	221	9.54	2.84
Coram CDP.....	30,111	417	316	1.38	10,737	607	5.65	2.93
East Moriches CDP.....	4,021	130	109	3.23	1,542	242	15.69	2.99
East Patchogue CDP.....	20,195	339	471	2.67	7,446	373	5.01	2.78
East Shoreham CDP.....	5,461	114	104	2.09	1,671	79	4.73	3.36
Farmingville CDP.....	14,842	73	0	0.49	4,560	195	4.28	3.38
Holbrook CDP (pt.).....	5,063	12	0	0.24	1,474	33	2.24	3.31
Holtsville CDP (pt.).....	12,530	12	12	0.10	3,749	101	2.69	3.43
Lake Grove village.....	9,612	94	93	0.98	3,301	230	6.97	3.10
Lake Ronkonkoma CDP (pt.).....	14,708	445	236	3.03	4,864	146	3.41	3.04
Manorville CDP.....	4,198	33	33	0.33	2,567	248	9.66	2.66
Nastic CDP (pt.).....	13,642	14	10	0.10	4,188	300	7.16	3.51
Nastic Beach CDP.....	10,293	0	0	0.00	4,212	846	20.09	3.06
Norfolk CDP.....	21,274	56	0	0.26	6,458	235	3.64	3.41
Middle Island CDP.....	7,848	316	296	4.03	3,184	320	10.05	2.63
Miller Place CDP.....	9,315	42	10	0.45	3,039	167	5.50	3.23
Mount Sinai CDP.....	8,023	26	26	0.32	2,559	143	6.37	3.34
North Bellport CDP.....	8,182	39	0	0.48	2,231	132	5.92	3.88
North Patchogue CDP.....	7,374	45	43	0.88	2,640	163	6.17	2.95
Old Field village.....	765	12	12	1.57	325	52	16.00	2.76
Patchogue village.....	11,060	192	8	1.74	4,844	414	8.53	2.45
Poquott village.....	770	0	0	0.00	313	39	12.46	2.81
Port Jefferson village.....	7,455	550	445	7.38	2,908	289	9.94	2.64
Port Jefferson Station CDP.....	7,232	92	43	1.27	2,602	135	5.19	2.89
Ridge CDP.....	11,734	192	127	1.64	5,349	435	8.31	2.36
Rocky Point CDP.....	8,596	15	0	0.17	3,870	724	18.71	2.73
Selden CDP.....	20,608	60	12	0.29	6,425	225	3.50	3.31
Setauket-East Setauket CDP.....	13,634	9	0	0.07	4,595	189	4.11	3.09
Shirley CDP.....	22,936	40	0	0.17	7,021	321	7.42	3.32
Shoreham village.....	540	0	0	0.00	204	24	11.76	3.00
Sound Beach CDP.....	9,102	40	0	0.44	3,575	479	13.40	2.93
Stony Brook CDP (pt.).....	13,726	62	0	0.45	4,737	238	5.00	3.02
Tarryville CDP.....	10,275	33	0	0.32	3,020	98	3.25	3.51
Topham CDP.....	4,637	893	857	19.26	1,306	107	7.10	2.68
East Hampton town.....	16,132	150	19	0.93	17,068	10,186	59.68	2.32
East Hampton village.....	1,402	19	19	1.36	1,684	1,010	59.98	2.05
East Hampton North CDP.....	2,780	0	0	0.00	1,889	688	36.42	2.31
Montauk CDP.....	3,801	124	0	4.13	3,996	2,735	68.94	2.32
Northwest Harbor CDP.....	2,167	0	0	0.00	2,510	1,425	41.69	2.45
Sag Harbor village (pt.).....	854	1	0	0.12	782	397	50.77	2.23
Springs CDP.....	4,355	4	0	0.14	3,459	1,672	48.34	2.43
Huntington town.....	191,474	3,017	2,592	1.36	64,842	1,981	3.06	3.00
Asharoken village.....	807	13	0	1.61	346	45	13.01	2.64
Centerport CDP.....	5,333	45	45	0.84	2,042	88	4.31	2.71
Cold Spring Harbor CDP.....	4,789	0	0	0.00	1,767	71	4.06	2.86

1990 Census Population and Group Quarter Counts, Vacancy Status and Persons Per Occupied Housing Units  
For  
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Area Name	Total Population	Total Group Quarters Population	Institutional Group Quarters Population	Percent Total Group Quarters Population	Total Housing Units	Total Vacant Housing Units	Percent Vacant Housing Units	Persons Per Occupied Housing Units
Conneaut CDP (pt.).....	12,210	300	300	2.46	3,731	59	1.58	3.24
Dix Hills CDP.....	23,849	194	116	0.75	7,698	123	1.62	3.39
East Northport CDP.....	20,411	95	85	0.47	6,970	177	2.54	2.99
Estons Neck CDP.....	1,499	0	0	0.00	563	50	8.88	2.92
Elwood CDP.....	10,916	92	47	0.84	3,387	70	2.07	3.26
Fort Salonga CDP (pt.).....	5,602	0	0	0.00	1,957	108	5.52	3.03
Greenham CDP.....	13,208	312	312	2.36	4,421	89	2.01	2.98
Halesite CDP.....	2,487	0	0	0.00	1,004	34	3.39	2.77
Huntington CDP.....	18,243	208	167	1.14	7,013	252	3.59	2.67
Huntington Bay village.....	1,321	0	0	0.00	542	27	4.98	2.95
Huntington Station CDP.....	28,247	166	47	0.59	9,946	377	3.78	2.93
Lloyd Harbor village.....	3,343	77	18	2.30	1,106	68	6.15	3.15
Melville CDP.....	12,386	57	0	0.45	4,014	91	2.27	3.19
Northport village.....	7,572	46	48	0.61	3,010	129	4.29	2.61
South Huntington CDP.....	9,434	340	340	3.53	3,297	82	2.49	2.89
West Hills CDP.....	5,849	0	0	0.00	1,993	37	1.86	2.99
Islip town.....	299,587	6,657	4,437	2.22	95,314	5,588	5.86	3.26
Bayport CDP.....	7,702	47	47	0.61	2,753	195	7.08	2.99
Bay Shore CDP.....	21,279	283	144	1.33	7,938	524	6.60	2.83
Baywood CDP.....	7,351	10	10	0.14	2,214	42	1.90	3.38
Bohemia CDP.....	9,556	177	133	1.85	3,200	106	3.31	3.03
Brentwood CDP.....	45,218	439	213	1.41	12,023	248	2.06	3.79
Brightwaters village.....	3,265	10	10	0.31	1,150	30	2.61	2.91
Central Islip CDP.....	26,028	119	23	0.46	7,697	301	3.91	3.50
East Islip CDP.....	14,325	170	160	1.19	4,470	100	2.14	3.10
Hauppauge CDP (pt.).....	9,593	112	0	1.17	3,183	128	4.02	3.10
Holbrook CDP (pt.).....	20,210	38	37	0.19	6,156	160	2.60	3.36
Holtsville CDP (pt.).....	2,442	0	0	0.00	783	26	3.32	3.23
Islandia village.....	2,769	2	0	0.07	930	50	5.38	3.14
Islip CDP.....	18,984	105	105	0.55	6,458	335	5.20	3.08
Islip Terrace CDP.....	5,530	0	0	0.00	1,667	34	2.04	3.39
North Bay Shore CDP.....	12,799	46	0	0.36	3,464	78	2.25	3.77
North Great River CDP.....	3,964	0	0	0.00	1,125	18	1.60	3.58
Oakdale CDP.....	7,873	226	0	2.87	2,772	133	4.80	2.90
Ocean Beach village.....	131	0	0	0.00	574	514	89.35	2.18
Rensselaers CDP.....	20,391	60	45	0.29	6,522	190	2.91	3.21
Saltaire village.....	38	0	0	0.00	573	358	95.98	2.53
Sayville CDP.....	16,350	199	157	1.20	5,560	152	2.73	3.02
West Bay Shore CDP.....	4,907	0	0	0.00	1,788	104	5.82	2.91
West Islip CDP.....	28,419	328	328	1.15	8,657	187	2.16	3.32
West Sayville CDP.....	4,689	114	44	2.44	1,884	361	19.16	3.00
Pocomtuck Reservation.....	136	0	0	0.00	46	1	2.17	3.02
Nesic CDP (pt.).....	136	0	0	0.00	46	1	2.17	3.02
Riverhead town.....	23,011	733	472	3.19	10,801	2,045	19.12	2.55
Aquebogue CDP.....	2,060	10	0	0.49	954	149	15.59	2.54
Calverton CDP (pt.).....	3,666	55	0	1.50	1,921	188	9.79	2.08
Jamestown CDP.....	1,532	56	0	3.66	962	395	40.85	2.59
Riverhead CDP.....	8,814	448	361	5.08	3,536	313	8.85	2.40
Uading River CDP.....	5,317	134	111	2.52	2,142	331	15.45	2.84
Shelter Island town.....	2,263	0	0	0.00	2,148	1,131	52.65	2.25
Dering Harbor village.....	28	0	0	0.00	27	14	51.85	2.15
Shelter Island CDP.....	1,198	0	0	0.00	871	375	43.05	2.41
Shelter Island Heights CDP.....	1,042	0	0	0.00	1,230	742	59.36	2.05
Shinnecock Reservation.....	375	0	0	0.00	173	38	21.97	2.78
Smithtown town.....	113,406	3,280	3,213	2.89	36,828	1,263	3.43	3.10
Conneaut CDP (pt.).....	23,914	59	31	0.25	7,572	140	1.85	3.21
Fort Salonga CDP (pt.).....	3,574	26	0	0.73	1,174	57	4.86	3.18
Hauppauge CDP (pt.).....	18,157	3	3	0.03	3,414	95	2.78	3.04
Head of the Harbor village.....	1,334	0	0	0.00	465	27	5.81	3.09
Kings Park CDP.....	17,773	2,052	2,052	11.55	5,591	260	4.65	2.93
Lake Ronkonkoma CDP (pt.).....	4,289	35	35	0.82	1,401	72	5.14	3.20
Nesconset CDP.....	10,712	234	234	2.18	3,308	130	3.93	3.30
Nissequogue village.....	1,620	0	0	0.00	576	38	6.60	3.01
St. James CDP.....	12,703	476	476	3.75	4,428	172	3.88	2.87
Smithtown CDP.....	25,638	395	382	1.54	8,360	261	3.12	3.12
Stony Brook CDP (pt.).....	0	0	0	0.00	0	0	0.00	0.00



1990 Census Population and Group Quarter Counts, Vacancy Status and Persons Per Occupied Housing Units  
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Area Name	Total Population	Total Group Quarters Population	Institutional Group Quarters Population	Percent Total Group Quarters Population	Total Housing Units	Total Vacant Housing Units	Percent Vacant Housing Units	Persons Per Occupied Housing Units
Village of the Branch village.....	1,669	0	0	0.00	538	11	2.04	3.17
Southampton town.....	44,976	1,594	790	3.54	33,622	15,593	46.38	2.41
Bridgehampton CDP.....	1,997	21	0	1.05	1,573	811	51.56	2.59
East Quogue CDP.....	4,372	12	12	0.27	2,985	1,204	40.34	2.45
Flanders CDP.....	3,231	32	12	0.99	1,459	336	23.03	2.85
Hampton Bays CDP.....	7,893	136	10	1.72	5,227	1,951	37.33	2.37
North Haven village.....	713	0	0	0.00	505	198	39.21	2.32
North Sea CDP.....	2,530	0	0	0.00	2,198	1,132	51.50	2.37
Noyack CDP.....	2,059	0	0	0.00	1,854	951	51.29	2.28
Pine Valley village.....	1,486	658	656	44.28	357	59	16.53	2.78
Quogue village.....	898	0	0	0.00	1,282	905	70.59	2.38
Ramapo-Speonk CDP.....	1,831	12	12	0.65	1,208	491	40.65	2.56
Riverside CDP.....	1,300	0	0	0.00	700	44	9.43	2.05
Sag Harbor village (pt.).....	1,276	0	0	0.00	957	359	37.51	2.13
Shinnecock Hills CDP.....	2,847	574	0	20.16	2,261	1,240	54.84	2.23
Southampton village.....	3,980	88	88	2.21	2,980	1,291	43.32	2.30
Southampton CDP.....	1,302	25	0	1.92	683	185	27.01	2.55
Watermill CDP.....	1,893	10	0	0.53	1,703	958	56.25	2.53
Westhampton CDP.....	2,129	26	0	1.22	1,486	667	44.89	2.57
Westhampton Beach village.....	1,571	0	0	0.00	2,485	1,777	71.51	2.22
Southold town.....	19,836	216	168	1.09	12,979	4,854	37.40	2.41
Cutchogue CDP.....	2,627	12	0	0.46	1,586	538	33.92	2.50
Greenport village.....	2,070	20	3	0.97	1,134	270	23.81	2.37
Greenport West CDP.....	1,614	150	150	9.29	1,128	487	43.17	2.28
Laurel CDP.....	1,094	0	0	0.00	641	233	36.35	2.48
Mattituck CDP.....	3,902	0	0	0.00	2,191	712	32.50	2.44
Peconic CDP.....	1,100	0	0	0.00	639	219	34.27	2.62
Southold CDP.....	5,192	16	0	0.31	3,539	1,290	36.45	2.30
Sullivan County.....	69,277	5,419	2,829	7.82	41,814	17,238	41.23	2.60
Bethel town.....	3,693	291	23	7.88	3,693	2,343	63.99	2.56
Collison town.....	3,084	253	22	8.43	1,648	541	32.83	2.50
Jeffersonville village.....	484	22	22	4.55	253	40	15.81	2.17
Cochecton town.....	1,318	17	17	1.29	889	385	43.31	2.58
Delaware town.....	2,433	341	38	13.71	1,244	354	28.42	2.36
Fallsburg town.....	11,443	2,431	1,922	22.99	4,322	3,075	70.44	2.71
South Fallsburg CDP.....	2,115	241	0	11.39	1,335	645	48.31	2.72
Woodridge village.....	783	8	8	1.02	476	145	30.46	2.34
Forestburgh town.....	614	0	0	0.00	465	242	52.04	2.75
Franklin town.....	1,332	1	0	0.08	1,084	585	53.97	2.67
Highland town.....	2,147	126	23	5.87	1,521	701	46.09	2.46
Liberty town.....	9,825	663	317	6.75	4,946	1,372	27.43	2.93
Liberty village.....	4,128	241	231	5.84	1,827	254	13.90	2.67
Lumberland town.....	1,425	0	0	0.00	1,276	700	54.86	2.47
Mankating town.....	9,792	11	0	0.11	5,391	1,826	33.87	2.74
Bloomington village.....	316	0	0	0.00	149	27	18.12	2.59
Wartburg village.....	1,048	0	0	0.00	461	48	14.75	2.67
Neversink town.....	2,951	0	0	0.00	1,358	471	30.23	2.71
Rockland town.....	4,096	39	27	0.95	2,428	925	38.10	2.70
Livingston Manor CDP.....	1,482	0	0	0.00	603	74	12.27	2.80
Thompson town.....	13,711	925	448	6.75	8,331	3,198	38.39	2.49
Monticello village.....	4,397	439	262	6.45	3,043	494	16.23	2.42
Tusten town.....	1,271	99	0	7.79	998	498	49.90	2.34
Tioga County.....	52,337	363	318	0.69	20,234	1,414	6.99	2.76
Barton town.....	8,925	200	180	2.24	3,667	275	7.50	2.57
Univerly village.....	4,787	200	180	4.18	2,017	129	6.40	2.43
Barshire town.....	1,503	0	0	0.00	475	29	6.11	2.92
Candor town.....	5,310	0	0	0.00	2,041	156	7.64	2.82
Candor village.....	869	0	0	0.00	344	25	7.27	2.72
Newark Valley town.....	4,189	0	0	0.00	1,540	110	7.14	2.93
Newark Valley village.....	1,082	0	0	0.00	454	45	9.91	2.45
Nichols town.....	2,525	0	0	0.00	932	59	6.33	2.89
Nichols village.....	573	0	0	0.00	204	10	4.85	2.92
Onaga town.....	21,279	141	138	0.66	8,071	454	5.63	2.78
Apalachin CDP.....	1,208	0	0	0.00	482	33	6.85	2.49

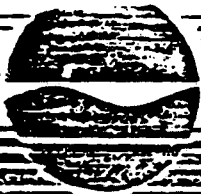
**REFERENCE NO. 26**



## PROJECT NOTE

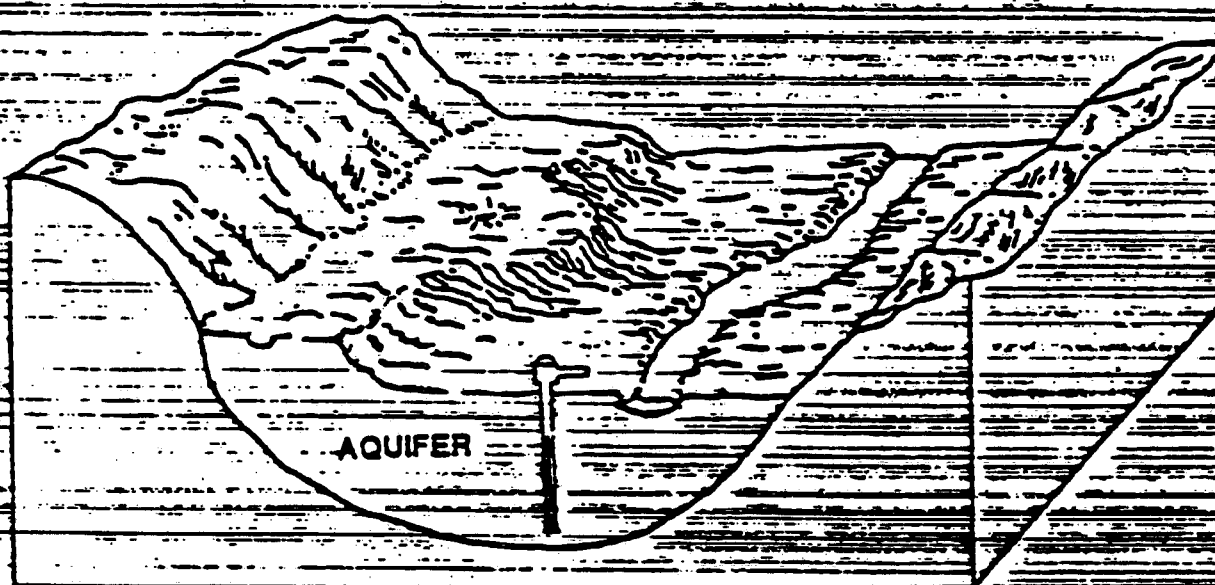
TO: Project File - Star Sand & Gravel Corp.DATE: September 1996FROM: Tanya BallaW.O. NO.: 04200-022-021-0135-05SUBJECT: Wellhead Protection Areas

Portions of the 4-mile radius surrounding the site are in Zone I which is designated as a groundwater management zone (deep recharge area). The aquifers in this area are the Upper Glacial and Magothy Aquifer. Based on the wellhead protection area program delineation, portions of the 4 mile radius fall in a WHPA. The site source is not within a WHPA.



Department of Environmental Conservation

# PROPOSED NEW YORK STATE WELLHEAD PROTECTION PROGRAM



Submittal  
to  
United States Environmental Protection Agency

New York State Department of Environmental Conservation  
MARIO M. CUOMO, Governor      THOMAS C. JORLING, Commissioner

May 1990

Approved by EPA  
2/100



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION II

JACOB K. JAVITS FEDERAL BUILDING  
NEW YORK, NEW YORK 10278

Ed Knyfd  
NUS Corporation  
1090 King Georges Post Road  
Suite 1103  
Edison, NJ 08837

Dear Mr. Knyfd:

As you requested during our telephone conversation on December 11, 1990, enclosed is a copy of New York State's Wellhead Protection Plan. The plan was approved by EPA in September of 1990.

Please note page 20 of the plan. It gives a summary of baseline wellhead protection area delineations.

If you need further assistance, you may contact me at 212-264-4124.

Sincerely,

*Maureen Krudner*  
Maureen Krudner, Geologist  
Ground Water Management Section

**PROPOSED  
NEW YORK STATE  
WELLHEAD PROTECTION PROGRAM**

**SUBMITTAL  
TO  
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
IN  
APPLICATION FOR IMPLEMENTATION FUNDS**

**NEW YORK STATE  
DEPARTMENT OF ENVIRONMENTAL CONSERVATION  
DIVISION OF WATER  
ALBANY, NY**

**MAY 1990**

## **ACKNOWLEDGEMENTS**

The New York State Department of Environmental Conservation gratefully acknowledges the assistance and recommendations of the members of the Wellhead Protection Advisory Committee. To date, these members have included the following:

- Aldo Andreoli, Suffolk County Dept. of Health Services
- Donald Beavers, Temporary Commission on Tug Hill
- Donald Bingham, U.S. Geological Survey
- Jessica Breiten, Herkimer-Oneida Planning Dept.
- James Coon, NYS Dept. of State;
- Robert Denz, Broome County Health Dept
- Hope Donovan, League of Women Voters
- John Edwards, Long Island Water Conference
- James Feuss, Cortland Co. Dept. of Health
- Robert Fickies, NYS Geological Survey
- William Golnitz, Chautauqua Co. Health Dept.
- Bernard Gorman, Long Island Water Conference
- Nancy Jarvis, Cortland Co. Planning Dept.
- Richard Kasprowicz, NYS Dept. of Health
- Margaret Kavanaugh, Schenectady Co. Planning Dept.
- John Kent, Herkimer-Oneida Planning Dept.
- William Lee, American Water Resources Association
- Sarah Meyland, Suffolk Co. Water Authority
- Todd Miller, U.S. Geological Survey
- Jacqueline Moody, NYS Dept. of Agriculture & Markets
- James Napoli, Dutchess Co. Health Dept.
- Donald O'Dell, NYS Dept. of State
- Francis Padar, Nassau Co. Dept. of Health
- Kenneth Pokalsky, Business Council of NYS
- Keith Porter, NYS Water Resources Institute-Cornell University
- George Prolos, NYS Legislative Comm. on Water Resource Needs of L.I.
- Thomas Reamon, NYS Dept. of Health
- Joseph Salvato, American Water Works Association
- Ronald Slotkin, Broome Co. Health Dept.
- David Stern, NYS Legislative Comm. on Water Resource Needs of L.I.
- John Stonebanks, Suffolk Co. Water Authority
- Edith Tannenbaum, Long Island Regional Planning Board
- Mark Walker, NYS Water Resources Institute-Cornell University
- Patricia Walsh, Association of Towns of the State of New York
- John Williams, U.S. Geological Survey
- Donald Zizzi, Schenectady Co. Planning Dept

The original submittal (June 19, 1989) was prepared by Allan Tedrow, Kevin Roberts and James Lister of the NYS Department of Environmental Conservation, Division of Water, Groundwater Management Section. The revised document (May, 1990) was prepared by Kevin Roberts and Allan Tedrow.

The typing of this document by Barbara J. Crier, of the Department of Environmental Conservation, is also gratefully acknowledged.



## **PREFACE**

This report represents a revision of the Proposed New York State Wellhead Protection Program, submitted to the U.S. Environmental Protection Agency on June 19, 1989. Following the June 1989 submittal, there was an additional review by the New York State Wellhead Protection Advisory Committee (see **ACKNOWLEDGEMENTS**) and by key program managers and regional staff of the NYS Department of Environmental Conservation. The initial comments of the USEPA concerning the submittal were received by New York in January 1990. In March 1990, the USEPA, in accordance with the provisions of the Safe Drinking Water Act amendments, notified the state that the submittal was incomplete. The revisions contained in this document primarily include many clarifications of statements made in the original document, but also include additional items to complete the original submittal (e.g., public participation summary) and items to address the adequacy concerns of USEPA.

The wellhead protection activities of the Department of Environmental Conservation in the intervening period have included further development of new source management programs (e.g., chemical bulk storage), incorporation of wellhead protection in existing programs (e.g., water supply permit program), assistance to regional planning agencies in wellhead protection

activities (e.g., 205(f) projects on source identification), regional and statewide outreach and education efforts, and providing geologic information and unconsolidated aquifer delineation information.

Most importantly, the interest of county agencies and municipal governments in New York in wellhead protection has grown considerably since the June 1989 submittal, with significant activity by key counties and municipalities in Upstate New York, by the Long Island Regional Planning Board concerning Long Island's Special Groundwater Protection Areas, and by Long Island's major water suppliers. Substantial interest in training (including delineation models and management tools), and in developing protection ordinances has been expressed.

Agencies and local government associations apart from the Department of Environmental Conservation have initiated public discussion and training activities concerning wellhead protection and groundwater management.

These activities demonstrate the desired evolution of local wellhead protection programs that the New York State Wellhead Protection Program is designed to foster.

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## **CHAPTER 1**

### **WELLHEAD PROTECTION PROGRAM SUMMARY AND PURPOSE**

#### **1.1. Introduction**

Responsible and effective environmental management demands careful focus on geographic areas where resource management is most needed to achieve the greatest benefit for a given level of effort. This is the overriding objective of wellhead area protection. The resource is groundwater. The benefit is reducing the risk of contamination of drinking water supply wells for the greatest number of people. The level of effort includes the cost of activities ranging from planning and assessment to the implementation and enforcement of appropriate groundwater quality protection controls at all levels of government. The issues to be evaluated and resolved include better defining the federal, state and local government partnership in groundwater protection, establishing the most rational geographic targeting and preventive management framework, and determining the optimum allocation of funds, if they become available, to achieve results.

This report is intended to satisfy the requirements of Section 1428 of the Safe Drinking Water Act in describing New York State's overall goal and plan for groundwater resource and wellhead area protection. Many important elements of wellhead area protection will evolve as local plans are designed and evaluated, especially aspects involving education, local government roles, and data collection and assessment. This submittal is intended to serve as supporting information in application for assistance funds from EPA to further develop and implement the plan. It presents the basic direction for using additional support obtained through new funding or reallocation of existing resources.

The elements of this report include the following:

- Duties of state agencies, local governments and public water supply systems (Chapter 2).
- Delineation of wellhead protection areas (Chapter 3).

- Identification of potential groundwater contamination sources (Chapter 4).
- Discussion of groundwater management approaches (Chapter 5).
- Discussion of groundwater-dependent public water system contingency planning (Chapter 6).
- Discussion of wellhead protection planning for new wells (Chapter 7).
- Discussion of public participation aspects (Chapter 8).

It is important to recognize that the proposed Wellhead Protection Program is not the first groundwater resource protection program in New York State. It does not replace the state's existing groundwater management program. Indeed, its goals and structure are already contained within that comprehensive program. This submittal refines and extends the geographic targeting framework already adopted as a principal groundwater protection policy. The basic groundwater program will continue to apply to the entire groundwater resource of the state and thus will provide a significant degree of protection for all groundwaters.

The remainder of this chapter provides additional introductory background on New York State's groundwater resources, its existing groundwater management program, and the general meaning of wellhead area protection.

#### **1.2. Background: Groundwater and Groundwater Management in New York State**

Groundwater is a critically important and uniquely vulnerable source of drinking water for over six million people in New York State, roughly one-third of the state's residents. These people draw their water from over 5,000 community wellfields or wells (serving over four million people), and more than 10,000 non-community public wells and an unknown number of private wells (serving

over two million people). In recent years, increased use of chemicals in our society has been accompanied by increasing evidence of contamination of groundwater resources. This contamination, in some cases, has been caused by chemicals of significant toxicological concern and has been sufficient to require closure or treatment of public and private water supplies.

New York State recognized the importance of groundwater resource and drinking water protection relatively early and began the development of its groundwater quality management programs in the years following World War II. Groundwater classifications and standards evolved into groundwater discharge limitations and early wellhead protection area approaches. The adoption of 83 ambient groundwater quality standards in 1978, supplemented by drinking water quality standards, coincided with the development of comprehensive groundwater protection programs. This culminated in the final publication of two major reports, the Long Island Groundwater Management Program (1986), and the Upstate New York Groundwater Management Program (1987).

These comprehensive programs form the foundation for all groundwater management efforts in the state. They encompass many major groundwater protection programs, including but not limited to solid waste, hazardous waste, pesticides, petroleum, hazardous substances, mining, and wastewater disposal and discharge. They include the activities of all relevant state agencies and form a bridge to local government activities. Most importantly, the comprehensive program reports specifically describe geographic targeting frameworks for groundwater protection that are the basis for wellhead area protection.

More recently, the New York State Water Resources Planning Council published a comprehensive New York State Water Resources Management Strategy (1989). This Strategy, prepared with major input from the New York State Departments of Environmental Conservation and Health, from local government and public representatives, and from six other state agencies, comprises 14 volumes and addresses specific issues in 13 regions of the state. It endorses the geographic targeting frameworks of the previous

Groundwater Management Program reports and supports the adoption of Watershed Rules and Regulations as a protective management approach for public water supplies.

As a general rule, wellhead area protection is a targeting approach to protect groundwater supplying specific wells. In certain cases, wellfields with multiple wells or regions with high densities of wells and complicated recharge characteristics must be considered together. Aquifer-level or aquifer segment targeting is a potentially useful approach for wellhead protection in New York because the aquifers are typically not geographically extensive (Upstate New York) or are pumped using a great number of wells (Long Island).

An important aspect of New York State's groundwater program is that all fresh groundwaters in the state are classified for best usage as a source of potable water supply (Class GA) regardless of location or current use. The comprehensive set of ambient groundwater quality standards and guidelines apply to all groundwater. These standards and guidelines (which include drinking water standards) underlie all major groundwater protection programs currently operating or under development.

New York's groundwater management programs have either already adopted or have begun to set a targeting framework that goes beyond commonly recognized wellhead area concepts. In Nassau and Suffolk counties (which share a single aquifer system on Long Island), considerable effort has been devoted to the delineation and revision of the boundaries of eight hydrogeologic zones. The Deep Flow Recharge Area (which comprises three of these zones) is considered to be the highest priority area for protecting wells in the deeper Magothy and Lloyd aquifers. Management program targeting on Long Island is keyed to these eight zones.

Additionally, nine Special Groundwater Protection Areas (SGPAs) have been delineated on Long Island and are the subject of an extensive planning effort funded in part by New York State and by the Long Island Regional Planning Board. Suffolk County has also defined "Water Supply Sensitive Areas" for protecting wells in the Glacial aquifer. The implementation of wellhead area

protection on Long Island will not replace this targeting approach. Additional geographic assessment may be included in the Wellhead Program for Long Island. It is important to emphasize that management program targeting and implementation are ultimately the most critical aspects of wellhead protection. The groundwater protection accomplishments of county-wide ordinances on Long Island must also be recognized.

In Upstate New York, unconsolidated aquifers are not as extensive as on Long Island. A considerable degree of geographic targeting has been achieved by the mapping and categorizing of Upstate aquifers. Many of these are relatively thin deposits of glacial drift in narrow valleys (less than one or two miles wide). Certain state-level programs, particularly waste management and disposal, are already strongly tied to these delineations.

The partnership between federal, state and local government is perhaps the most important part of a successful wellhead protection effort. Certain local land use control elements of a successful program are not within the state's statutory authority and are more appropriately implemented at the local level. Under the home rule provisions of New York State Law, towns, cities and villages are responsible for regulating land use. Land use controls are an important component of wellhead protection plans.

The state/local partnership is also important in adjusting protection efforts to be sensitive to local and regional differences in the groundwater resources and vulnerability, uses, programs, and local capacity for management. Local authorities in many areas of the state also have the principal authority for inspecting and testing potential contamination sources and have important roles in enforcement.

### **1.3. Wellhead Protection Program: Purpose and Goal**

The purpose and goal of New York State's Wellhead Protection Program are to protect wellhead areas within New York State from contaminants which may have any adverse effects on the health of persons, as described in the federal Safe Drinking Water Act. This goal is

more explicitly described in the adopted New York State Groundwater Management Program as follows:

1. Protect and conserve groundwater resources for the best use as drinking water supply.
2. Emphasize problem prevention.
3. Target the groundwater program to most effectively use available program resources by focusing special emphasis on critical high-yielding aquifer systems.
4. Foster a state/local partnership.

The quantity management goal of the comprehensive program has been deleted from this list. However, the Wellhead Protection Program, essentially a quality management effort, is indirectly supportive of the quantity goal because protection of existing wells reduces the need to abandon supplies and develop new sources.

The key goal for emphasis in the Wellhead Protection Program is the third, that of geographic targeting, which has been left in the original groundwater program wording above. Part of the emphasis of the Wellhead Protection Program will be to refine and strengthen this goal.

The Wellhead Protection Program will promote targeting of staffing and funding resources and adjust program operations to achieve the maximum water quality protection benefits. Determining the optimum balance between expenditures on geographic assessment (delineation and mapping) and expenditures on improved enforcement of existing programs and development of new programs is the key challenge in developing the wellhead protection effort. This balance will differ in different areas of the state. In all areas of the state, a major need is actual program implementation and enforcement.

Wellhead protection cannot be viewed in a discrete, piecemeal fashion. The steps of delineation, source inventory and source management and control must be considered together. A scheme of very costly groundwater flow delineation analyses cannot be consistent



with the overall wellhead protection objectives if they unduly diminish funds available for management program implementation or if the management program does not require great sophistication. Increased refinements of delineations are justifiable to the extent that corresponding refinements in management and enforcement are practical and possible.

#### **1.4. Wellhead Protection Program Summary**

This summary is an overview of material developed in more detail in Chapters 2 through 8.

##### **1.4.1. Agency Responsibilities**

The Department of Environmental Conservation (DEC) is the principal agency responsible for developing and implementing state-level aspects of the Wellhead Protection Program and for coordination. The Department of Health (DOH) is responsible for certain aspects related to public water supply well data, contingency planning, new well planning, and Watershed Rules and Regulations. Regional and county planning agencies and county governments are responsible for county-level planning, management and educational outreach elements in the overall program, in addition to any county-level ordinances developed for wellhead protection. Town, village and city governments are responsible for local land use control, local ordinances and other local-level aspects of wellhead protection. Water suppliers will have a role in developing local Watershed Rules and Regulations, education, land acquisition and other program aspects determined by DEC and DOH. The educational effort will be shared by all levels, including Cooperative Extension, the universities and the State Education Department. Federal agencies and other state agencies will participate as appropriate, as coordinated by DEC with the assistance of EPA for federal agencies.

##### **1.4.2. Wellhead Protection Area Delineation**

The Safe Drinking Water Act defines a Wellhead Protection Area (WHPA) as "the surface and subsurface area surrounding a water well or wellfield, supplying a public water system, through which contaminants are reasonably likely to move toward and reach such water well or wellfields." This definition is not specific because there is no

time framework and because there is a requirement that contaminants be reasonably likely to reach the well, a condition that is very difficult to accurately predict. States are given flexibility by the Safe Drinking Water Act in determining delineation approaches.

New York State proposes that unconsolidated aquifer boundaries serve as the fundamental delineation of wellhead protection areas and that a multiple zone approach be used within the total WHPA for varying management relative to risk. This approach is modified for Long Island and for bedrock aquifers, as described in Chapter 3. New York's approach proposes to allow local flexibility in an evolutionary process of delineation refinements, and to allow utilization of previously delineated protection areas, where appropriate.

There are many distinct advantages in this overall approach. A very important advantage is that considerable aquifer characterization and mapping work has already been accomplished. Second, it is consistent with the evolution and principal policies of both the comprehensive New York State Groundwater Management Program (1987) and New York State Water Resources Management Strategy (1989), in addition to the New York State Watershed Rules and Regulation policies. Third, it focuses attention of local governments on the entire aquifer resource and facilitates contingency planning and new (or future) well protection. Finally, it provides a base within which more sophisticated delineations (e.g., subdividing the overall WHPA) can be made as programs require and funding permits.

A possible drawback of using aquifer boundaries—that aquifers may be broad regional systems—is not a major problem in most of New York State. In Upstate New York most public water supplies using groundwater are in unconsolidated aquifers of rather limited areal extent. Most important recharge areas are within the boundaries of the unconsolidated aquifers, another advantage of this approach.

Chapter 3 provides further details and background on wellhead protection area delineation.

#### **1.4.3. Potential Contamination Source Identification**

The New York State Wellhead Protection Program proposes to use the classification of potential contamination sources based on process or operation proposed by the Office of Technology Assessment and endorsed by USEPA.

Many source inventory and identification programs are already in place or are being developed for individual groundwater protection programs. These include but are not limited to registries of hazardous waste disposal sites, petroleum storage locations, the Industrial Chemical Survey, records of the State Pollutant Discharge Elimination System (SPDES), and the hazardous material storage registry (in development). Similar information is available for other potential sources (mining, municipal waste, etc.). Other inventories (pesticides, salt storage) are needed and certain improvements (locational data, data formats) are needed in the existing registries.

The effort expended in pinpointing and mapping any possible source will be determined in balance with the effort needed to manage the most important sources. The current registries will be used as much as possible at the greatest level of geographic detail feasible within the constraints of the registry. Using these registries, some sources outside of the actual wellhead protection areas may be listed. An effort will be made to explore new formats for processing available registry data to maximize compatibility and ease of interpretation.

Chapter 4 provides further detail on potential contamination source inventory.

#### **1.4.4. Groundwater Management Approaches**

The emphasis in groundwater management efforts from the state level will be to continue to develop and implement the program recommendations made as part of the comprehensive groundwater management program, with a special focus on aspects relevant to geographic targeting of program elements.

Groundwater protection for all fresh groundwaters in New York is accomplished in the existing state regulatory programs by classifying all fresh groundwaters as potential drinking water sources, and using the stringent 6 NYCRR Part 703 groundwater standards as the management objectives statewide. Solid and hazardous waste management programs formally utilize geographic targeting as a management tool. Other state-level programs (e.g., spill response) have integrated major water supply aquifer targeting into day-to-day functions even though such targeting may not be explicitly stated in written policy.

Current and developing state-level programs will be evaluated to determine useful new approaches or cost-effective methods for targeting management practices. The needs identified will be considered in allocating available funds or staff, soliciting new funds, and in regulatory and program development.

Local governments, with the authority to regulate land use, have the capability of controlling new facilities through zoning and site plan review. Density of new development can also be controlled through zoning. Adoption of specific groundwater protection ordinances is also an avenue available to municipal and county governments, through sanitary codes or other approaches. Finally, land acquisition for groundwater protection is a viable management tool for local governments and water suppliers.

Watershed Rules and Regulations can be promulgated by the New York State Health Department following initiation and development by public water purveyors, whether municipal or privately-owned. The WHPA delineation proposals in this submittal are compatible with the models for Watershed Rules and Regulations.

The state will also use its available resources and explore new approaches for technical assistance, outreach and education to local governments to encourage participation and local initiatives. The potential for using "facilitated training", or training intermediate parties to train local groups, will be considered.

Management aspects are described in further detail in Chapter 5.

#### **1.4.5. Contingency Planning**

The existing contingency planning requirements of the New York State Department of Health's emergency planning program meet and exceed the requirements of Section 1428(a)(b) of the Safe Drinking Water Act. The existing New York program deals with all forms of water supply emergencies. In addition, the Superfund Amendments and Reauthorization Act (SARA) Title III emergency planning activities in New York support contingency planning needs for wellhead protection.

Chapter 6 further discusses contingency planning.

#### **1.4.6. New Well Planning**

The existing New York State Water Supply Permit Program enables the Department of Environmental Conservation to require, as part of the permit approval process, the adoption of a groundwater (or wellhead) protection plan for proposed new wells. The New York State Wellhead Protection Program proposes that development of such a plan be required for new wells. The plan may include Watershed Rules and Regulations, local ordinances (town, village, or city), or county ordinances. Such plans often will entail the collection of hydrogeologic information to support WHPA delineations. Such plans must be consistent with existing authorities of the water supplier and they may include intermunicipal or county-level agreements or Watershed Rules and Regulations (NYSDOH).

This aspect of the Wellhead Protection Program is further discussed in Chapter 7.

#### **1.4.7. Public Participation**

There has been substantial public participation in the evolution of these proposals, particularly in the two major planning and strategy development projects from which New York's Wellhead Protection Program was derived. The public participation in both the New York State Groundwater Management Plan and the New York State Water Resources Management Strategy fully adhered to public participation procedures.

In addition, the Wellhead Protection Program development has established a Wellhead

Protection Advisory Committee to assist in development of the submittal.

Public participation is further discussed in Chapter 8.

#### **1.5. Evaluation of Wellhead Protection Program Progress**

Program progress reports which evaluate Wellhead Protection Program development and implementation will follow one of two alternative approaches. In the event that an Assistance Agreement is adopted between EPA and DEC in accordance with the provisions of the Safe Drinking Water Act, three types of reports will be submitted to EPA which are specific to the Wellhead Protection Program and which follow the "Guidance for Applicants for State Wellhead Protection Program Funds Under the Safe Drinking Water Act" (EPA 440/6-87-011).

These are:

- a. Interim and End-of-Year Progress Reports;
- b. Biennial Status Report; and
- c. Annual Financial Status Report.

The precise content and schedule for these reports would be negotiated as part of the Assistance Agreement.

If EPA does not provide assistance and an Assistance Agreement is not established, the progress of the Wellhead Protection Program will be reported within the context of the already established procedures for reviewing the DEC Division of Water Management Plan between DEC and EPA.

## **CHAPTER 2**

### **DUTIES AND RESPONSIBILITIES**

#### **2.1. Introduction**

New York State's designation of the wellhead area as the highest priority area for groundwater protection is documented in New York State's Groundwater Management Program. Wellhead protection is a concept that has been utilized by a number of environmental and public health programs in New York State for decades. The passage of the 1986 Amendments of the Safe Drinking Water Act creating the Wellhead Protection Program serves as an opportunity for New York State to build on previous efforts and to foster a coherent and consistent statewide approach for a wellhead protection program through additional management efforts.

New York State's proposed Wellhead Protection Program (WHPP) has been developed from existing regulatory and management structures. Within the state there are agencies and programs at all levels of government established to regulate, enhance and manage natural resources and protect the public health. As in the State's Groundwater Management Program, it will be largely these agencies and programs that will be called upon to implement an effective WHPP.

#### **2.2. Federal Agencies: General Responsibilities**

There are two principal federal agencies with important roles and responsibilities relating to groundwater protection in New York State. These are the U.S. Environmental Protection Agency (USEPA) and the U.S. Geological Survey (USGS), a unit of the Department of Interior.

##### **2.2.1. Environmental Protection Agency**

The USEPA is the agency responsible for most of the major federal regulatory programs which provide for protection of the environment and public health. These include: the Clean Water Act (CWA), the Safe Drinking Water Act (SDWA), the Resource Conservation and Recovery Act (RCRA),

Superfund (CERCLA), the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), the Toxic Substances Control Act (TSCA), and the Clean Air Act (CAA).

EPA generally delegates many of the specific program activities to the states upon request and upon attainment of legislative requirements. This allows the state to be flexible in tailoring the program to local environmental needs (to the extent permitted by statute). EPA continues to play a role in overseeing state performance in carrying out delegated national programs which use federal grants and in supporting the states through technical expertise and research.

New York State has received delegation of programs under the Clean Water Act, the Safe Drinking Water Act, RCRA, and the Clean Air Act. The authorities in the Acts are generally mirrored by comparable state legislation, and the delegated programs have in the past decade provided essential funding support to assist strong state programs in water pollution control, public water supply regulation, air pollution control, and solid and hazardous waste management.

Not all elements of federal programs have been delegated. Examples of program activities for which USEPA maintains direct responsibility in New York include:

- Development of national drinking water quality standards (note that New York maintains a more comprehensive set of state drinking water standards);
- Designation of "sole source" aquifers under the Safe Drinking Water Act;
- Underground injection control under the Safe Drinking Water Act;
- Registration of pesticides for use under FIFRA;

• Administration of federal Superfund.

## **2.2.2 U.S. Geological Survey**

The second federal agency with major responsibility relating to groundwater in New York State is the U.S. Geological Survey - Water Resources Division (USGS-WRD). The mission of the USGS-WRD, which is a non-regulatory agency, is to develop and disseminate scientific knowledge and understanding of the Nation's water resources. In cooperation with federal, state and local agencies, the USGS-WRD maintains an observation-well network for collection of groundwater levels and conducts interpretive investigations of the groundwater resources in New York State. The USGS-WRD maintains extensive files of groundwater data including computerized databases containing information from over 40,000 wells in the state.

The USGS-WRD will provide technical support to the Wellhead Protection Program by providing groundwater data and through cooperatively funded investigations. Wellhead protection-related investigations include regional studies of the hydrogeology and water quality of the state's aquifers and demonstration projects involving the delineation of contributing areas and sources of recharge to wellfields in selected representative hydrogeologic settings.

## **2.2.3. Other Federal Agencies**

Several other federal agencies have indirect relationships to wellhead protection in New York. With respect to technical support, the soil information collected by the U.S. Department of Agriculture - Soil Conservation Service (SCS) may be utilized in various aspects of the program. This information is generally available in published form. Coordination between NYS and the SCS State Office in Syracuse is generally routine and direct, and no new arrangements are needed.

There is relatively little federal land in New York State outside of several military facilities. Of these, only Fort Drum in Jefferson County is a significant user of groundwater for public water supply. In such cases, the policies described in this submittal apply. The WHPA's have already

been determined according to the delineation approach in Chapter 3. General coordination with the facility will be through the Department of Environmental Conservation's Regional Office. Such coordination has been routine in the past.

For other coordination with federal agencies not related to site-specific concerns, the USEPA-Region II office (New York City) will be responsible for assisting the Central Office of the Department of Environmental Conservation in communications and issue resolution.

## **2.3. State Agencies: General Responsibilities**

There are a variety of state agencies with interests and responsibilities relating to groundwater and wellhead protection. The two agencies with the most direct responsibilities are the Department of Environmental Conservation (DEC) and the Department of Health (DOH).

### **2.3.1. Department of Environmental Conservation**

The DEC is the state's environmental agency, with responsibility for administering a full array of environmental quality and natural resource programs. The Department is the state's custodian for water in the environment. It is charged with the "coordinated management of water resources" (ECL Section 3-03031), the control of water pollution and the maintenance of reasonable standards of purity of the state's waters, both ground and surface (ECL Article 17). The DEC is also the agency that has been delegated authority to administer a number of EPA programs under the CWA and RCRA such as the SPDES program and the municipal and hazardous waste programs. The DEC has been designated by the Governor to be responsible for the wellhead protection elements of the Safe Drinking Water Act.

Integral elements of the Department's groundwater management and wellhead protection programs include water resources planning, issuing water supply permits, setting ambient water quality standards and classifications, water quality monitoring and surveillance, issuing municipal and industrial

wastewater discharge permits (SPDES), spill response, regulating hazardous substance and petroleum bulk storage, regulating the development, operation and maintenance of municipal wastewater facilities, and the nonpoint source management program.

Several other programs regulate important potential sources of groundwater contamination. Principal among these are programs in the areas of solid and hazardous waste (including waste facilities regulation) permitting of industrial waste transport, state Superfund (relating to hazardous waste site remediation), and hazardous waste enforcement.

Other programs which have a relationship to wellhead protection include those in the areas of pesticides and other hazardous substances regulation, mineral resources, and oil and gas regulation.

### **2.3.2 Department of Health**

The Department of Health (DOH), under the New York State Public Health Law, is responsible for the protection of public health and more particularly, to assure a potable supply of drinking water for the state's citizens. Generally, it is responsible for water which has been withdrawn by public water suppliers for distribution to the consumer.

EPA delegated the water system supervision aspects of the Safe Drinking Water Act to the DOH in the late 1970's. The DOH implements this aspect of the SDWA through Part 5 of the State Sanitary Code. Under the Public Health Law and Part 5, the DOH inspects public water supply systems in the state to ensure proper operation and maintenance and delivery of a potable and adequate supply of water. This program includes regulation of public water supply facility design and construction; monitoring of the quality of waters delivered to the tap; inspection surveillance, and evaluation of all public water systems; emergency response to water supply systems experiencing critical water quality or quantity problems; laboratory services; establishment of state drinking water standards; and enforcement of both state and federal

drinking water standards. In addition, the DOH plays an integral role in DEC's water supply permit program through the review of water quality and plans for any needed treatment process, well construction or other improvements needed as part of the water supply permit.

The DOH evaluates available health effects data and establishes appropriate drinking water standards and guidelines.

Standards for installing on-site domestic sewage disposal systems are promulgated by the DOH with protection of public health and groundwater protection as goals.

The DOH has statutory authority for two programs which will play a significant role in the state's WHPP. These two programs are the Emergency Planning Program, and the Watershed Rules and Regulations Program.

### **2.3.3 Other State Agencies**

Other state agencies also have roles and responsibilities which form parts of the state's current program for groundwater management and thus have a role in the state's WHPP. For example, the Department of State is responsible for many aspects related to local government, particularly training of zoning and planning board officials. The NYS Geological Survey is responsible for mapping the bedrock and surficial deposits of the state, and providing geologic advice and data to the various federal, state and local agencies concerned with protection of the state's groundwater resource. The Attorney General represents the state in cases of litigation to enforce regulatory controls and obtain clean-up by responsible parties. The New York State Soil and Water Conservation Committee provides guidance and training for managing certain nonpoint source threats. The NYS Legislative Commission on Water Resource Needs of Long Island is authorized to recommend groundwater protection approaches, new legislative or administrative actions for groundwater protection, and to investigate and evaluate water resource studies.

## **2.4. Regional Planning Agencies**

Regional planning agencies exist in many areas of New York State, including most of the areas which contain heavily utilized aquifer systems. These agencies prepare regional plans for a variety of public purposes, and undertake planning-related studies. In many cases, their activities have included water quality management planning under Sections 208 and 205(j) of the federal Clean Water Act.

## **2.5. County and Local Governments**

Land use controls are within the regulatory jurisdiction of local government, and are an important aspect of groundwater protection. Such land use controls may prohibit or otherwise manage activities that adversely affect wellhead areas and sensitive aquifer systems.

County agencies in many parts of New York State play an important role in assisting the administration of state-level regulatory programs, thereby effectively augmenting the effort devoted to these activities, as well as carrying out important management activities which cannot be accomplished within available state or federal resources.

### **2.5.1. County Government Agencies**

Planning agencies and health agencies exist in most of New York State's counties.

County health agencies may administer major elements of state-level (DEC and DOH) programs for water pollution control and water supply regulation. In some cases, county health agencies also administer their own programs, resulting in a more comprehensive overall program than that administered by the state. A major example is Suffolk County on Long Island, where the County's Article 12 Program provides for comprehensive regulation of the storage and handling of toxic and hazardous chemicals.

County planning agencies are often involved in environmental or natural resource planning activities, as well as in providing expertise and technical assistance to local government on the

development and implementation of local land use controls. In many cases, these agencies can assist in tailoring environmental management activities, such as wellhead or groundwater management, to best meet local needs and conditions. They also may be able to provide an important program linkage with local government on the development and implementation of land use controls to better protect wellheads and groundwaters.

County planning boards, under the General Municipal Law (Sections 239-l, m, n), must review certain municipal zoning actions and, where the county legislative body has so authorized, subdivision plats before the municipal board can take final action. While this is a limited power (if the county planning board opposes a certain action, the municipal board needs a majority plus one of the full board to approve said action), it can serve as a tool to raise the awareness of municipalities concerning groundwater and wellhead protection.

Several counties, such as Chautauqua and Cortland, have established the position of county groundwater coordinator. This position may be located either in the County Health Department or Planning Department. The general role of the position is to serve as a focal point for all groundwater protection and related activities within the county and to provide assistance to towns and municipalities. These positions are proving to be significant positive steps in furthering groundwater protection efforts in these counties.

All counties, except those in New York City, in New York State have County Soil and Water Conservation Districts (SWCDs) as well as Cooperative Extension offices. These agencies have strong working relationships with the rural/agricultural community in the state and increasingly with local governments in urbanizing areas. The SWCDs work directly with farmers to develop farm conservation plans which include soil erosion control and nonpoint source control. SWCDs also review environmental data pertaining to soil properties, terrain, and associated watershed characteristics.



Cooperative Extension is an important vehicle for providing public education and information in rural areas. In its work with individual farmers, Cooperative Extension implements integrated pest management and soil testing programs throughout the state. Where fertilizer and pesticide use in wellhead areas or over critical aquifer systems may be an issue, or where public education may be an appropriate means of addressing wellhead concerns generic to rural areas, these agencies represent important potential participants in the wellhead program.

### **2.5.2. Towns, Cities and Villages**

Towns, cities and villages in New York State are vested under state law with responsibility for regulation of land use. Local land use controls (e.g., zoning) are not used widely at present for wellhead/groundwater protection, although a few important examples have recently emerged. In the future, however, effective local land use control powers must be an important element of management programs.

Zoning requirements which have been used for groundwater and wellhead area protection include: use restrictions; density limits; lot coverage; setbacks; special use permits; and performance standards.

In addition to zoning, municipalities also have authority for site plan and subdivision review and local ordinance adoption, all of which can play a significant role in wellhead/groundwater protection.

### **2.6. Public Water Supply Systems**

While public water system purveyors generally do not have regulatory authority, they do have roles to play in the protection of water supply sources.

Two specific areas of responsibility fall to the water purveyor: compliance with terms of the water supply permit authorizing the taking of water (administered by DEC), and the decision to develop Watershed Rules and Regulations (which are ultimately promulgated by the State Department of Health). Water supply permits for

wells generally require the control of lands close to the well through ownership or easement.

Water purveyors also share the responsibility to educate their consumers about wellhead protection and what the consumer can do to promote groundwater and wellhead protection. It is therefore essential that the officials of public water supply systems be aware of potentially contaminating activities within their wellhead areas. It is further incumbent on these officials to identify the need for local wellhead protection programs. Without strong support by these officials, local programs may be difficult to establish.

### **2.7. Coordination**

The Department of Environmental Conservation will have the central coordination role in the Wellhead Protection Program. Wellhead protection activities of the U.S. Environmental Protection Agency within New York State, including those related to local governments and the New York State Water Resources Institute's activities in New York State's WHPP, will be coordinated through the Department of Environmental Conservation's Wellhead Protection Program unit. The DEC's interactions with local governments will be through its existing agency structure, including both the DEC regional offices and direct coordination by the Central Office. The Department of Environmental Conservation will also be responsible for coordination with other NYS agencies and with other adjacent states concerning wellhead protection issues.

Interstate wellhead protection issues in actuality will be a rare concern in New York State. A review of public water supply well locations shows that very few systems are in the vicinity of state boundaries. In addition, there are relatively few interstate aquifer systems. The Department of Environmental Conservation will have the lead responsibility for interstate coordination, where needed. Chapter 5 further discusses this issue.

### **2.8. Summary**

The existing institutional structure in New York State can accommodate the program activities

required to provide wellhead protection. Most of the required program elements already exist. Major new programs are not required. It is more important to provide adequate funding and carry out existing programs and responsibilities, with appropriate adjustment and targeting to provide a high level of wellhead protection. The following listing summarizes major responsibilities in wellhead protection.

### **SPECIFIC DUTIES IN WELLHEAD PROTECTION PROGRAM**

#### **Federal Agencies**

##### **1. Environmental Protection Agency**

- Oversight and approval of WHPP's
- Technical guidance and assistance
- Funding
- Assist NYS in coordination with federal agencies

##### **2. U.S. Geological Survey**

- Development of information on groundwater resources
- Assessing utility of various technical procedures for delineating wellhead areas
- Determining usefulness of generic wellhead delineations using aquifer classification systems or other parameters

##### **3. Other Agencies**

- Implementation of NYS WHPP (as appropriate)

#### **State Agencies**

##### **1. Department of Environmental Conservation**

- Lead agency responsibility for WHPP as delegated by Governor.
- Administering the major statewide environmental protection programs which regulate potential sources of groundwater contamination.
- Installing and implementing wellhead protection concepts in environmental management programs.
- Establishing wellhead protection area delineation policies, and review of enhanced local delineations.
- Providing available records of potential contamination sources to local wellhead protection programs.
- Providing guidance for local agencies for wellhead protection area delineations and management and promoting local WHPP's.
- Reviewing and commenting on local programs.
- Funding assistance for regional and local efforts to develop wellhead programs.
- Oversight of reporting requirements and recordkeeping for Superfund Amendments and Reauthorization Act Title III data. Planning oversight is the responsibility of the State Emergency Management Office.
- Oversight of the Water Supply Permit Program for new wells, and coordination with wellhead protection.
- Coordination (local governments, other state agencies, EPA and federal agencies, other states).

- Funding USGS cooperative program to continue groundwater and wellhead information development.

- Education.
- Recommending State legislation.

#### Local Agencies

#### **2. Department of Health**

- Promulgating watershed rules and regulations for groundwater supplies.
- Promoting local initiatives for watershed rules and regulations.
- Administering emergency planning requirements of State Law and SDWA.
- Providing assistance for water supply programs administered by counties.

#### **3. Department of State**

- Local government interactions and training of zoning and planning officials.

#### **4. State Geological Survey**

- Miscellaneous aspects of geologic information management and assessment.

#### **5. New York State Water Resources Institute, Cooperative Extension and State Universities**

- Community and local government education.
- Research

#### **6. New York State Soil and Water Conservation Committee**

- Guidance and outreach for certain nonpoint source threats.

#### **7. New York State Legislative Commission on Water Resource Needs of Long Island**

#### **1. Municipal Governments**

- Adopting local groundwater protection ordinances (including delineation), implementing and enforcing the ordinances.
- Using zoning, site plan review, subdivision review powers to protect groundwater and wellhead areas.
- Inventorying sources of contamination, as coordinated with water supplier and other state and local agencies, and as determined by local management programs for wellhead protection.

#### **2. County Governments**

- Implementing NYSDEC and NYSDOH programs that are related to wellhead protection (as coordinated by the relevant state agency).
- Adopting ordinances to supplement existing state regulations (6 NYCRR and 10 NYCRR), as appropriate, and implementing and enforcing the ordinances.
- Providing local assistance to municipal and town governments related to wellhead protection.
- Inventorying sources of contamination, as coordinated with water supplier and other state and local agencies, and as determined by local management programs for wellhead protection.
- Educating county citizens and commercial sector concerning

groundwater and wellhead protection.

**3. Regional Planning Agencies**

- Promoting and supporting local wellhead protection efforts.
- Inventorying sources of contamination, as coordinated with water supplier and other state and local agencies, and as determined by local management programs for wellhead protection.

**4. Public Water Supply System Purveyors**

- Evaluating need for and initiating (if appropriate) adoption of watershed rules and regulations including definition of protection zones.
- Inventorying sources of contamination, as coordinated with other state and local agencies, and as determined by local management programs for wellhead protection.
- Enforcing Watershed Rules and Regulations, in coordination with relevant state and local agencies.
- Implementing conditions of water supply permits, in coordination with relevant state and local agencies.
- Complying with emergency planning requirements of DOH.
- Participating in water user and public education efforts.

## **CHAPTER 3**

### **WELLHEAD PROTECTION AREA DELINEATION**

#### **3.1. Introduction and Institutional Processes**

##### **3.1.1. Introduction**

The comprehensive New York State Groundwater Management Program, developed in the early 1980's and published in revised and final documents in 1986 (for Long Island) and 1987 (for Upstate), recommended key policies and program initiatives endorsing geographic targeting and critical area protection. These concepts were forerunners of the Safe Drinking Water Act's Wellhead Protection Program. Significant progress has been made in different aspects of geographic targeting of programs and in different parts of New York State. New York acknowledges these accomplishments as an integral part of its overall Wellhead Protection Program.

Delineation determines geographic areas for which different levels of groundwater protection activities are to be instituted. The Wellhead Protection Program in New York State is intended to accomplish a wider recognition of targeting objectives by all levels of government, by citizens in general, and to begin an evolutionary process toward improved targeting and protective program implementation.

The basic wellhead protection delineation approach in New York State recognizes aquifers as the fundamental geographic unit for targeting management efforts. This approach must be modified where aquifers are broad regional systems (DEC considers this case to occur only on Long Island), or where aquifers are not well characterized (considered to be the case for bedrock aquifers, in general). Elsewhere, the unconsolidated aquifers of New York tend to be of limited areal extent and they generally include the important recharge areas within their boundaries. These unconsolidated aquifers also are the source of the large majority of groundwater-derived public water supply systems.

The New York State Wellhead Protection Program proposes that unconsolidated aquifer boundaries (the land surface overlying the aquifer) serve as the baseline definition for the overall wellhead protection area (WHPA). For the baseline definition, both confined and unconfined unconsolidated aquifers are grouped together. Revisions are allowable based on site-specific evaluations. This aquifer boundary approach is proposed to be modified on Long Island and for wells in bedrock aquifers as described in Section 3.2. For all public water supply wells, specific proposed WHPA delineation policies are described in Section 3.2. —

The aquifer boundary approach for the overall WHPA has several distinct advantages. It takes advantage of considerable recent and ongoing work in mapping and detailed assessments of aquifer boundaries. Incorporating this work directly into the Wellhead Protection Program provides a practical way for more effective targeting to move forward rapidly rather than being constrained by the need to perform modeling to delineate protection areas.

The aquifer approach also encompasses other non-public wells and potential future well sites, and places major focus on the high-yielding groundwater resources which are most important and most vulnerable. This last aspect is considered very important in the education component of wellhead protection, both for local officials and for the general public.

Wellhead protection area delineation is an evolutionary process. The first need for refinement is the further subdivision of the total wellhead protection area, as required for differentiated management objectives. A second area for potential refinement is delineation of the overall WHPA in the Glacial Aquifer on Long Island and in bedrock aquifers. Issues related to these topics are reviewed in both Sections 3.2 and 3.3. Flexibility for refinement or revision is very important due to the wide variability in

hydrogeologic settings, data availability, and local degree of contamination threat in New York State.

### **3.1.2. Institutional Processes for Overall Delineation Policies**

Advisory committee and work group input into the original comprehensive Groundwater Management Program was substantial. The basic concept of geographic targeting was set forth in that program. The groups included:

- Federal Agencies (EPA, USGS)
- State Agencies (DEC, DOH, DOT, Agriculture & Markets, Energy Office, Geological Survey)
- Cornell University
- County Agencies (Health, Planning)
- Associations (Conference of Mayors, American Water Works Association, Business Council)
- Citizen Groups (NRDC, League of Women Voters)

DEC reconvened most of the original contributors into an advisory committee to assist in guiding the Wellhead Protection Program, with particular emphasis on delineation issues. Added to the original group have been:

- State Agencies (Department of State)
- County Agencies (a wider range of county participants)
- Regional Agencies and Commissions (additional planning and legislative commissions)
- Associations (Association of Towns, American Water Resources Association)

The new group, the Wellhead Protection Advisory Committee, has also included additional participation from the U.S. Geological Survey and DEC geological staff.

The delineation approach proposed in this submittal was recommended by the DEC Groundwater Management Section (responsible for developing the program) and agreed to by the Wellhead Protection Advisory Committee (members listed in front of submittal). The delineation approach directly conforms with the policies in the formally adopted Upstate New York Groundwater Management Program and Long Island Groundwater Management Program.

The DEC has also established a Memorandum of Understanding (MOU) with the DOH concerning the development of the Wellhead Protection Program. Additional MOU's will be developed as needed to institutionalize interagency working arrangements.

To support the technical needs of DEC and of local governments in carrying out and refining delineations, DEC plans to convene an ongoing Delineation Technical Workgroup consisting of geologists and groundwater management staff of DEC, DOH, State Geological Survey, USGS, and local governments. This group would consider revisions or improvements in the overall delineation approach, and would essentially be concerned with hydrogeologic aspects of the program rather than administration or contamination source control. The mission of this group is to provide recommendations to the DEC staff responsible for the overall Wellhead Protection Program. It will be convened upon EPA approval of New York State's submittal and will meet on at least a semi-annual basis or as needed.

Local authorities involved in wellhead protection may vary, as discussed elsewhere in this submittal. Therefore, uniform institutional processes at the local level will not be proposed across the entire state. Local agencies may act according to their own needs and authority. However, in all cases where Watershed Rules and Regulations are utilized as the local wellhead protection approach, the existing requirements of the New York State Department of Health (DOH) will be followed. Similarly, for all new wells, the institutional requirements of the New York State Department of Environmental Conservation's (DEC) Water Supply Permit Program will apply.

The proposed responsibility for initiating refinements of the baseline delineations described in this submittal will depend upon the regulatory approach adopted. Delineation refinements to be incorporated in Watershed Rules and Regulations approaches will be initiated and performed by water purveyors. Delineation refinements to be incorporated in county, town, village or city ordinances (including local public health ordinances) will be initiated and performed by the corresponding political authority. Delineation refinements to be incorporated in state-level regulatory programs will be performed by DEC.

In practice, most local activities will involve coordination with the State DEC and DOH. Each Department routinely reviews local activities to ensure that there are no conflicts with respect to policies and procedures and advises on the availability of technical information for delineation purposes. The overall coordination for aspects specifically related to the WHPP is the responsibility of DEC.

Other institutions, particularly the U.S. Geological Survey and Cornell and other universities, may be involved in special projects or case studies, as coordinated by DEC.

### **3.2. Delineation Criteria, Thresholds and Methods**

#### **3.2.1. Background - Existing Geographic Targeting**

The existing, and still evolving, geographic targeting framework for groundwater protection provides a priority system for managing risks to groundwater. Following is a brief summary:

##### **• Groundwater Classification - 6 NYCRR Part 703**

Ambient water quality standards and guidelines apply to all Class GA (fresh) groundwaters. Class GA groundwaters are defined as having best use as a source of drinking water and must meet New York State's drinking water standards in addition to the ambient standards. State management programs use this framework for

protection of all fresh groundwaters in New York State.

##### **• Unconsolidated Aquifers**

Mapping of unconsolidated aquifers has progressed significantly including State-defined primary and principal aquifers which are subsets of the unconsolidated aquifers. Site-specific detailed mapping is still in progress.

Primary and principal aquifers are generally similar geologically (both are highly productive unconsolidated deposits); primary aquifers are those which have large populations using them as drinking water sources. Primary aquifers have high priority for mapping additional hydrogeologic data through the DEC/USGS cooperative program, and in special Long Island programs.

These delineations are used in the process for siting new waste disposal facilities.

##### **• Long Island Hydrogeologic Zones**

Eight hydrogeologic zones have been delineated, covering all of Long Island. Three of these together comprise the Deep Flow Recharge Area. Management program initiatives (e.g., hazardous substance storage) are based on this Deep Flow Recharge Area.

##### **• Special Groundwater Protection Areas**

Nine Special Groundwater Protection Areas have been delineated within the Deep Flow Recharge Area in both Nassau and Suffolk Counties and are currently the subject of a planning project by the Long Island Regional Planning Board.

##### **• Other Geographic Targeting Approaches**

Suffolk County has specifically defined "Water Supply Sensitive Areas" which include zones 500 feet downgradient to 1,500



feet upgradient of public wells in the Upper Glacial Aquifer.

Watershed Rules and Regulations are promulgated by the NYS Department of Health upon initiation by local water purveyors. These include delineations of protection management zones for public water supply wells. The WRR delineations do not conflict with the wellhead protection area delineation policies proposed in this submittal.

The NYS Solid Waste Management Program, in 6 NYCRR Part 360, has defined "public water supply wellhead area" as the surface and subsurface area between a public water supply well or wellfield and the 99% theoretical maximum extent of the stabilized cone of depression of that well or wellfield considering all flow system boundaries and seasonal fluctuations. New landfills are banned in these areas, in addition to all primary and principal aquifers in the Upstate area. Special provisions are defined in law for Long Island siting. As with the Watershed Rules and Regulations, there is no conflict in terminology between the Part 360 public water supply wellhead area and the overall wellhead protection area proposed in this submittal. The overall protection area includes, and is larger than, the Part 360 wellhead itself. For landfill siting, Part 360 regulations will prevail. Part 360 determinations are made only for proposed landfill siting cases.

Other setback requirements have been utilized in various state or local management programs. When used, such as for pesticides (e.g., aldicarb) or septic tanks, the setbacks apply to all wells, public or private. As with the other targeting approaches, such setbacks do not conflict with the proposed wellhead protection area policies.

### Well Construction Specifications

Direct protection of the wellhead itself is achieved through adoption of construction specifications and standards. These are administered by the New York State Department of Health and follow the "Recommended Standards for Water Works" (NYS Health Department Bulletin #42, 1982). They apply to public water supply wells.

### 3.2.2. Wellhead Protection Area Delineation Objectives

The USEPA guidance for development of wellhead protection programs (Guidance for Applicants for State Wellhead Protection Program Assistance Funds under the Safe Drinking Water Act, EPA 440/6-87-011) contains the expectation that proposed programs will be designed to provide protection from three types of threats: direct introduction of contaminants in the immediate well area, microbial contaminants, and chemical contaminants. The first is dealt with through well construction and completion standards to be applied at the wellhead itself. The second is managed by delineating a zone to keep potential sources sufficiently distant from the well to allow die-off of the microorganisms. Establishing a minimum distance by measurement or by time-of-travel is the most common procedure for delineating areas for protection against microbial contamination.

To achieve protection against chemical contamination, EPA suggests three delineation approaches: delineation of wellfield management areas, contamination attenuation zones, or remedial action zones. Since chemicals can travel long distances, all or part of the recharge area for a well becomes the zone to be delineated for protection efforts.

The overall goals of New York State's delineation approach are essentially a combination of the wellfield management and remedial action zone goals described by EPA.

Wellfield management is used to define areas where heightened levels of protection will be

emphasized. A number of different zones may be delineated for a single water supply to provide different levels of management. The management options may range from selected land use prohibitions to specialized design specifications, enhanced facility inspections, or increased monitoring and education.

The remedial action area approach excludes high risk activities from a specifically defined zone but still allows them in more distant recharge areas. This may be refined by varying exclusions in different zones according to risk or the importance of the activity. The remedial action area concept is best applied to new or changing land uses, whereas wellfield management may be applied to existing or new land uses.

The contamination attenuation zone approach described by EPA is difficult to strictly apply due to limited capabilities to accurately predict chemical migration and persistence. In addition, the New York State groundwater standards apply to all fresh groundwaters, reducing the utility of an attenuation zone approach.

### **3.2.3. Delineation Policy**

The underlying objective of delineation is to use different degrees of management to control risks to water supplies. The significant diversity in geological conditions, aquifer use, and in local government capabilities across New York State indicates that the approach to delineation can not be uniform and rigid for all locations.

The ideal technical goal of wellhead delineation is to have sufficient knowledge of the hydrogeology of each public water supply well or wellfield to allow precise determination of the catchment area along with accurate times-of-travel for the entire flow system. Such information is not uniformly available across the state. New information will become available unevenly as funding from various local, state and federal sources is applied to specific priority areas.

In this setting, the New York State Wellhead Protection Program proposes general recognition of high-yielding aquifers (both confined and unconfined) as the fundamental wellhead

protection area units. As described in Section 3.2.4., this policy recognizes that more targeted delineations will be necessary on Long Island because it is entirely an aquifer. Also, bedrock aquifers are not adequately characterized now to allow this approach; however, most of the major, high-yielding aquifers in New York are in unconsolidated deposits. Within the wellhead protection area, delineation of an area designated as the remedial action area is proposed, as described in Section 3.2.5.

This policy is intended to reinforce public and management program recognition of the need to protect high-yielding aquifers. It takes advantage of considerable past and ongoing work on aquifer mapping and delineation and will permit further progress in communities which have already delineated aquifer boundaries and protection areas. These communities may directly proceed to management implementation or may utilize available funds on more advanced hydrogeologic evaluations within the WHPA, depending on local needs and goals.

Within this framework, utilization of alternative delineation approaches (such as time-of-travel) is allowed and encouraged. In most cases, such alternative approaches would be applied to subdividing the WHPA within the unconsolidated aquifer boundaries for applying different levels of management. The WHPA itself would remain the area defined by aquifer boundaries. In some cases, such as for bedrock aquifers, the alternative approaches may be used to redefine the WHPA itself. The Department of Environmental Conservation will be responsible for providing guidance for such alternative approaches.

### **3.2.4. Wellhead Protection Area Delineations**

The wellhead protection area delineation approach is summarized in Table 3.1. It recognizes that the aquifer system on Long Island and bedrock aquifers in Upstate New York must be treated differently than the unconsolidated aquifers in Upstate. The unconsolidated aquifer boundaries for the wellhead protection areas are those delineated on a series of maps titled

**TABLE 3.1.  
WELLHEAD PROTECTION AREA  
DELINEATION SUMMARY**

Geographic Region	Aquifer Area	Wellhead Protection Area Baseline Delineation
Long Island	Magothy & Lloyd Aquifers <hr/> Glacial Aquifer	Deep Flow Recharge Area <hr/> Simplified Variable Shape: 1,500 ft. radius upgradient 500 ft. radius downgradient
Upstate	Unconsolidated Aquifers <hr/> Bedrock Aquifers	Aquifer Boundaries (land surface) <hr/> Fixed Radius: 1,500 ft. radius

"Potential Yields of Wells in Unconsolidated Aquifers in Upstate New York" by the U.S. Geological Survey. Specifically, these maps, distributed for sale by the U.S. Geological Survey, are as follows:

1. Bugliosi, E.F., et al., 1988. Potential Yields of Wells in Unconsolidated Aquifers in Upstate New York - Lower Hudson Sheet. Water Resources Investigations Report 87-4274. U.S. Department of the Interior, Geological Survey, Albany, NY.
2. Bugliosi, E.F., et al., 1988. Potential Yields of Wells in Unconsolidated Aquifers in Upstate New York - Hudson Mohawk Sheet. Water Resources Investigations Report 87-4275, U.S. Department of the Interior, Geological Survey, Albany, NY.
3. Bugliosi, E.F., et al., 1988. Potential Yields of Wells in Unconsolidated Aquifers in Upstate New York - Adirondack Sheet. Water Resources Investigations Report 87-4276, U.S. Department of the Interior, Geological Survey, Albany, NY.
4. Miller, T.S., 1988. Unconsolidated Aquifers in Upstate New York - Finger Lakes Sheet. Water Resources Investigations Report 87-4122, U.S. Department of the Interior, Geological Survey, Albany, NY.
5. Miller, T.S., 1988. Potential Yields of Wells in Unconsolidated Aquifers in Upstate New York - Niagara Sheet. Water Resources Investigations Report 88-4076. U.S. Department of the Interior, Geological Survey, Albany, NY.

The boundaries illustrated on these maps serve as the total wellhead protection areas for public water supplies utilizing those aquifers. In certain cases, more detailed aquifer boundary maps or determinations for primary or principal aquifers (subsets of the full range of unconsolidated aquifers) have been or will be made by the U.S. Geological Survey or NYS Department of Environmental Conservation. These more detailed boundary determinations will generally supersede boundaries illustrated on the above referenced

maps as "revised" delineations of wellhead protection areas.

Both unconfined and confined unconsolidated aquifers are included on these maps and both are included in this definition of the overall wellhead protection area.

For all public water supplies utilizing groundwater, the overall wellhead protection area (WHPA) delineation will be subdivided into two parts. The innermost zone is referred to as the Remedial Action Area. The remainder of the WHPA is referred to as the Wellfield Management Area. The terminology is derived from the EPA guidance referenced earlier. Depending on local management objectives for groundwater protection, local hydrogeology, and data availability and resource availability, the Wellfield Management Area may be further subdivided. This further subdivision of the Wellfield Management Area would be considered a refinement of the "baseline" delineation. Methodologies, criteria and thresholds used for such revisions are flexible. Approaches proposed by local water purveyors will be evaluated and approved or disapproved upon submittal to the New York State Department of Environmental Conservation.

The term "baseline" delineation, as used in this submittal, is intended to represent the initial WHPA delineation advocated by the Department of Environmental Conservation. The delineation may be directly utilized in implementing management activities for groundwater protection. However, if site-specific conditions suggest that alternative delineations are appropriate (including the further subdivision of the Wellfield Management Area already cited), those delineations may be accepted by the Department of Environmental Conservation. The evolution of improved delineation techniques, the growing availability of hydrogeologic information, and the longer-term enhancements of groundwater protection programs may lead to a redefinition of the baseline delineations by the Department of Environmental Conservation.

These baseline delineations apply to public water supply wells. Applicants for new public water supply wells may be required to perform

alternative site-specific delineations according to conditions stipulated through the Water Supply Permit Program (refer to Chapter 7).

The proposed WHPA delineations are described according to the following geographic and hydrogeologic settings. They are also summarized in Table 3.1.

#### Unconsolidated Aquifers - Upstate New York

##### 1. WHPA Definition:

The boundaries of wellhead protection areas for public water supplies in unconsolidated aquifers in Upstate New York are the land surface boundaries of the aquifers as illustrated on the five-aquifer sheet maps for Upstate published and distributed by the U.S. Geological Survey (see earlier reference). These boundaries may be revised in accordance with more detailed primary and principal aquifer maps and boundary determinations as approved by the Department of Environmental Conservation. The maps provide definition for both unconfined and confined aquifers. Revisions of these boundaries may be made, pending approval by the Department of Environmental Conservation.

##### 2. Rationale:

The delineations proposed above are hydrogeologically-based and are consistent with the policies and goals of the Upstate Groundwater Management Program already adopted and certified by the Governor of New York as an element of the New York State Water Quality Management Plan.

##### 3. Mapping and Case Studies:

Mapping of these areas is already completed and published. Case studies are not considered appropriate, as the maps have been reviewed and approved by the U.S. Geological Survey and the Department of Environmental Conservation as part of the publication process.

#### 4. Public Water Supply Significance:

The large majority of public water supplies using groundwater, particularly for municipal and community systems, are located in unconsolidated aquifers. It is expected that a significant proportion of additional future supplies will also tap these systems.

#### Bedrock Aquifers - Upstate New York

##### 1. WHPA Definition:

The baseline boundaries of wellhead protection areas for public water supplies in bedrock aquifers are fixed radius areas with a radius of 1,500 feet from the wellhead. Revisions based on site-specific information are desirable, with the goals being to identify and delineate principal recharge areas. Revisions may be developed, pending approval by the Department of Environmental Conservation.

##### 2. Rationale:

The fixed radius approach for the initial WHPA is not based on estimated times-of-travel or drawdown. It provides a substantial increase in protection over more commonly existing protection zones (typically 100 feet or 200 feet). The principal rationale is that the baseline delineation gives a basis for immediate action on wellfield management without requiring expensive site-specific delineations. Revisions based on local conditions are encouraged, particularly for municipal community systems, of which there are relatively few in the State. The geographic targeting benefits of uniformly delineating substantially larger fixed radius areas for all bedrock wells are very questionable. Many of the bedrock public water supply wells are among the approximately 10,000 non-community public wells (e.g., isolated public buildings, roadside rest areas, etc.). There will be little geographic targeting advantage for groundwater protection programs if

numerous 3 to 12 square mile WHPA's (1-2 mile radius) for non-community wells intersect or nearly intersect across the State. It must be recognized that all fresh groundwaters in bedrock aquifers are classified as GA groundwaters and thus are already protected by substantial statewide protection programs which use rigorous ambient water quality standards in their design.

### 3. Mapping and Case Studies:

Mapping will be performed according to the phasing priorities described in Section 3.3. Case studies of fixed radius approaches are not considered to be of significant benefit. As proposals for revisions based on alternative approaches are submitted to the Department of Environmental Conservation, they will be evaluated for potential use as models for comparable hydrogeologic conditions.

### 4. Public Water Supply Significance:

Relatively few municipal community systems utilize bedrock aquifers in New York State and those that do are generally with low population dependence. Public water supplies in bedrock aquifers are typically non-community wells serving small numbers of people.

#### Magothy and Lloyd Aquifers - Long Island

##### 1. WHPA Definition:

The boundaries of the wellhead protection area for public water supplies using the Magothy and Lloyd aquifers are the boundaries of the Deep Flow Recharge Area as recognized by the Department of Environmental Conservation. Refinements within the overall WHPA may include further definition of Wellfield Management Areas, pending approval by the Department of Environmental Conservation.

### 2. Rationale:

The Deep Flow Recharge Area was determined to be the most important overall groundwater protection area for wells in the Magothy and Lloyd aquifers in the Long Island Groundwater Management Program already adopted and certified by the Governor of New York as an element of the New York State Water Quality Management Program. The delineations have also been adopted in the Suffolk County Sanitary Code.

### 3. Mapping and Case Studies:

Mapping of the Deep Flow Recharge Area is already completed. Additional case studies are not considered appropriate.

### 4. Public Water Supply Significance:

Most public water in Nassau County is withdrawn from the Magothy aquifer. The majority of public water supplies in Suffolk County are also withdrawn from the Magothy aquifer. Of those public water supplies in Suffolk County utilizing the Glacial aquifer, approximately half are located within the Deep Flow Recharge Area. Thus, these wells are included within the overall wellhead protection area for the deeper aquifers.

#### Glacial Aquifer - Long Island

##### 1. WHPA Definition:

The boundaries of the wellhead protection area for public water supplies using the Glacial aquifer are defined as a fixed variable shape zone with a fixed radius in the upgradient groundwater flow direction of 1,500 feet and a fixed radius in the downgradient direction of 500 feet. Revisions may be made, pending approval by the Department of Environmental Conservation.

## **2. Rationale:**

Fixed-shape zones are not based on calculated time-of-travel or drawdown. The proposed definition is consistent with Water Supply Sensitive Areas already delineated by Suffolk County (which contains nearly all of the Glacial wells on Long Island) and for which enhanced protection programs have already been implemented in the Suffolk County Sanitary Code. Approximately half of the Glacial wells are within the Deep Flow Recharge Area and are thus protected within a larger overall WHPA. Significant expansion of the WHPA for all Glacial wells may not provide any reasonable geographic targeting benefits, as most of the WHPA's would intersect or nearly intersect. All fresh groundwaters in the Glacial aquifer are already covered by substantial protection programs which utilize a rigorous set of ambient water quality standards.

## **3. Mapping and Case Studies:**

Mapping of the WHPA's for Glacial wells in Suffolk County has been completed through the Water Supply Sensitive Area delineations. For the relatively few Glacial wells in Nassau County, mapping will be completed according to the phasing priorities described in Section 3.3. Case studies of fixed-shape delineations are not considered to be of significant benefit. As proposals for revisions based on alternative approaches are submitted to the Department of Environmental Conservation, they will be evaluated for potential use as models for other Glacial well delineations.

## **4. Public Water Supply Significance:**

As stated previously, approximately one-fourth of the public water supplies in Suffolk County are based in Glacial wells that are outside of the Deep Flow Recharge Area. If Nassau County is included, only about one-eighth of the water supply dependency is from Glacial wells outside of the Deep Flow Recharge Area.

## **3.2.5. Remedial Action Areas**

For all community public water supply wells, regardless of setting, a remedial action area will be delineated within the WHPA. For those supply wells, the proposed baseline delineation of this area will be a fixed radius zone of 200 feet radius from the well. Revisions may be made after evaluation by the Department of Environmental Conservation. For non-community public water supply wells (e.g., isolated public buildings, etc.), the existing New York State Department of Health standards for well separations (e.g., from waste disposal facilities) are to be followed.

The rationale for this baseline delineation is based upon general observations in the past that such a zone has been adequate for protection against microbiological contamination. An alternative time-of-travel basis for delineating revised remedial action area boundaries would be to use a time-of-travel from a minimum of 60-days up to one year. The 60-day period has been used in New York State and in many European countries (USEPA, EPA 440/6-87-010, Guidelines for Delineation of Wellhead Protection Areas). A one-year period is considered conservative. In certain cases, the site-specific hydrogeology (e.g., confined aquifer conditions or long times-of-travel) and the nature of existing land uses and management options may allow remedial action areas smaller than 200 feet radius.

## **3.2.6. Potential Refinements and Summary**

Table 3.1 summarizes the baseline delineations for wellhead protection areas.

Refinements may include:

- Subdivision of the Wellfield Management Area portion of the WHPA, to allow application of different levels of management within the WHPA.
- Revision of the Remedial Action Area portion of the WHPA, according to alternative methods, including time-of-travel or drawdown analysis.



- Revised boundary determinations of the unconsolidated aquifers in Upstate, including primary and principal aquifers, or of the Deep Flow Recharge Area on Long Island.
  - Alternative hydrogeologic determinations of appropriate WHPA's in bedrock aquifers or for wells in the Glacial aquifer on Long Island.
- bedrock wells and Glacial wells will be performed as resources permit.

### **3.3. Phasing Considerations**

The published unconsolidated aquifer maps cited in the previous section complete the baseline WHPA delineations for all public water supply wells within those aquifers. The completed delineation of the Deep Flow Recharge Area on Long Island has been defined according to road boundaries. That delineation defines the WHPA for all public water supply wells in the Magothy and Lloyd aquifers. The baseline WHPA boundaries for public water supply wells using the Glacial aquifer in Suffolk County have been determined by the Suffolk County Department of Health Services through its Water Supply Sensitive Area designations.

The remaining baseline WHPA boundary determinations that are needed consist of a relatively small set of Glacial aquifer wells and public water supply wells in bedrock aquifers. The phasing priorities for these groups are, in order:

1. Municipal community wells
2. Non-municipal community wells
3. Non-community public wells

Within each priority group additional phasing may be generally ordered by population dependency with modifications made if there are significant known or suspected threats to the wells.

It is emphasized that the baseline WHPA delineations for the very large majority of public water supply wells (by population served) are completed. The delineations for the remaining

## **CHAPTER 4**

### **SOURCE IDENTIFICATION**

#### **4.1. Categories of Potential Groundwater Contamination Sources**

##### **4.1.1. Introduction**

Potential contamination sources as described in the federal Safe Drinking Water Act include those anthropogenic sources, both point and nonpoint, which involve the manufacture, use, storage, handling, transport, or disposal of toxic and hazardous substances which may have any adverse effect on human health. Certain activities (e.g., mining) may also be considered potential sources, because they may increase vulnerability to contamination and may be associated with other activities of concern.

In the broadest sense, potential contamination sources may include nearly all commercial, and many governmental and domestic activities. To be useful in guiding the management of contamination sources to maximize groundwater protection benefits, some differentiation or priority system is needed.

Priorities are based on the significance of the source and the intended management application of the inventory. Source significance is based on the type of contaminant (mobility in groundwater, known impacts on public water supplies, toxicology, pathogenicity), the quantity of the contaminant at that location, and the potential of that source type to release contaminants to groundwater and impact water supplies.

The management applications of the source inventory may include:

- Developing local awareness and support for groundwater protection program adoption;
- Emergency response planning;
- Inspection planning or sequencing;
- Monitoring design;

- Enforcement; tracking compliance;
- Targeting education efforts;
- Regional and local planning;
- Local land use regulations development; and
- Identifying new program or program improvement needs.

##### **4.1.2. Classification of Sources**

Potential contamination sources may be classified in many ways. The major need for groundwater protection is to provide a structure for collecting and interpreting data regarding existing contamination sources which is readily useable in a variety of programs.

The United States Office of Technology Assistance developed a comprehensive listing of potential contamination sources, including 33 types within six major groups (Table 4.1). This classification has been included in wellhead protection program guidance manuals prepared by USEPA. All of these source types occur within New York State, although mine tailings, mine waste and mine drainage are less important than in many other states. Mining (e.g., sand and gravel) is still considered to be a potential source in that it may be associated with other activities (fuel usage) that can contaminate groundwater.

The OTA classification in Table 4.1 is endorsed by the Department of Environmental Conservation as a useful structure for collecting data related to potential contamination sources.

A long-term goal of contamination source inventory is to utilize computer geographic information systems (GIS) to manage and interpret the data collected. The mapping keys of GIS methods or other maps will not be required to explicitly duplicate the OTS classification, as this would be counterproductive if more efficient

**TABLE 4.1**  
**SOURCES OF GROUNDWATER CONTAMINATION**

<p><b>CATEGORY 1: <u>Sources Designed To Discharge Substances</u></b></p> <ul style="list-style-type: none"> <li>- Subsurface percolation (e.g., septic tanks and cesspools)</li> <li>- Injection wells <ul style="list-style-type: none"> <li>. Hazardous waste</li> <li>. Non-hazardous waste (e.g., brine disposal and drainage)</li> <li>. Non-waste (e.g., enhanced recovery, artificial recharge solution mining and in-situ mining)</li> </ul> </li> <li>- Land application <ul style="list-style-type: none"> <li>. Wastewater (e.g., spray irrigation)</li> <li>. Wastewater by-products (e.g., sludge)</li> <li>. Hazardous waste</li> <li>. Non-hazardous waste</li> </ul> </li> </ul> <p><b>CATEGORY 2: <u>Sources Designated to Store, Treat, and/or Dispose of Substances; Discharge Through Unplanned Release</u></b></p> <ul style="list-style-type: none"> <li>- Landfills <ul style="list-style-type: none"> <li>. Industrial hazardous waste</li> <li>. Industrial non-hazardous waste</li> <li>. Municipal Sanitary</li> </ul> </li> <li>- Open dumps, including illegal dumping (waste)</li> <li>- Residential (or local) disposal (waste)</li> <li>- Surface impoundments <ul style="list-style-type: none"> <li>. Hazardous waste</li> <li>. Non-hazardous waste</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>- Waste tailings</li> <li>- Waste piles <ul style="list-style-type: none"> <li>. Hazardous waste</li> <li>. Non-hazardous waste</li> </ul> </li> <li>- Materials stockpiles (salt, coal, etc.)</li> <li>- Graveyards</li> <li>- Animal burial</li> <li>- Aboveground storage tanks <ul style="list-style-type: none"> <li>. Hazardous waste</li> <li>. Non-hazardous waste</li> <li>. Non-waste (petroleum, etc.)</li> </ul> </li> <li>- Underground storage tanks <ul style="list-style-type: none"> <li>. Hazardous waste</li> <li>. Non-hazardous waste</li> <li>. Non-waste (petroleum, etc.)</li> </ul> </li> <li>- Containers <ul style="list-style-type: none"> <li>. Hazardous waste</li> <li>. Non-hazardous waste</li> <li>. Non-waste</li> </ul> </li> <li>- Open burning and detonation sites</li> <li>- Radioactive disposal sites</li> </ul> <p><b>CATEGORY 3: <u>Sources Designed to Retain Substances During Transport or Transmission</u></b></p> <ul style="list-style-type: none"> <li>- Pipelines <ul style="list-style-type: none"> <li>. Hazardous waste</li> <li>. Non-hazardous waste</li> <li>. Non-waste (petroleum, etc.)</li> </ul> </li> </ul>
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**SOURCE:** Office of Technology Assessment, Protecting the Nation's Groundwater from Contamination, October 1984.

**TABLE 4.1**  
**SOURCES OF GROUNDWATER CONTAMINATION**  
(Continued)

<ul style="list-style-type: none"> <li>- Materials transport and transfer operations               <ul style="list-style-type: none"> <li>. Hazardous waste</li> <li>. Non-hazardous waste</li> <li>. Non-waste (petroleum, etc.)</li> </ul> </li> </ul> <p><b>CATEGORY 4: <u>Sources Discharging Substances as a Consequence of Other Planned Activities</u></b></p> <ul style="list-style-type: none"> <li>- Irrigation practices (e.g., return flow)</li> <li>- Pesticide applications</li> <li>- Fertilizer applications</li> <li>- De-icing salts applications</li> <li>- Urban runoff</li> <li>- Percolation of atmospheric pollutants</li> <li>- Mining and mine drainage               <ul style="list-style-type: none"> <li>. Surface mine-related</li> <li>. Underground mine-related</li> </ul> </li> </ul> <p><b>CATEGORY 5: <u>Sources Providing Conduit or Inducing Discharge Through Altered Flow Patterns</u></b></p> <ul style="list-style-type: none"> <li>- Production wells               <ul style="list-style-type: none"> <li>. Oil (and gas) wells</li> <li>. Geothermal and heat recovery wells</li> <li>. Water supply wells</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>- Other wells (non-waste)               <ul style="list-style-type: none"> <li>. Monitoring wells</li> <li>. Exploration wells</li> </ul> </li> <li>- Construction excavation</li> </ul> <p><b>CATEGORY 6: <u>Naturally occurring Sources Whose Discharge is Created and/or Exacerbated by Human Activity</u></b></p> <ul style="list-style-type: none"> <li>- Groundwater-surface water interactions</li> <li>- Natural leaching</li> <li>- Saltwater intrusion/brackish water upconing (or intrusion of other poor quality natural water)</li> </ul>
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**SOURCE:** Office of Technology Assessment, Protecting the Nation's Groundwater from Contamination, October 1984.

keys are developed. However, the goal of all acceptable source inventory approaches will be to include the categories in the OTS listing.

#### **4.2. Contamination Source Inventory Procedures**

Mapping of sources should use a minimum base map scale of 1:24,000 for printed map or map overlays. The use of alternative larger scale base maps which enable more precise locations (e.g., tax maps) should be considered on a case-by-case basis. GIS methods may be accepted, pending approval by the Department of Environmental Conservation.

Extensive source-related data systems and registries for the most important potential contamination sources already exist in New York State. However, these vary in design and geographic specificity. These important data systems include, but are not limited to:

- ◀ Groundwater discharge permits
- ◀ Industrial Chemical Survey: Locations of continuation usage, handling and storage of industrial and toxic chemicals
- ◀ Underground Injection Control (UIC) Program data, especially UIC Class V wells (USEPA program)
- ◀ Emergency management and response data, including the Superfund Amendments Reauthorization Act (SARA) Title III data
- ◀ Solid waste facility locations
- ◀ Hazardous waste site locations (inactive and active)
- ◀ Hazardous waste generators
- ◀ Mining operation locations
- ◀ Oil and gas production locations
- ◀ Petroleum storage locations
- ◀ Petroleum and chemical spill or leak locations

- ◀ Hazardous substance storage locations
- ◀ Radioactive waste storage locations

The recommended procedure for contamination source inventory is as follows:

1. The lead responsible local authority obtains the location data for the major categories listed above with the assistance of DEC and other local, state and federal agencies. The lead responsibility is determined by the intended management approach (e.g., county agency if county ordinances are intended, town officials if town ordinances are intended, water purveyor if Watershed Rules and Regulations are intended, etc.).
2. Lead responsible local authority collects available information on other categories of sources listed in the OTS classification in Table 4.1.
3. General field survey performed to confirm or revise collected information and to fill in information gaps.
4. If used, GIS mapping methods are coordinated with DEC to ensure compatibility.
5. If GIS methods are not directly used, hard copy maps are prepared on a 1:24,000 scale or larger.

Baseline wellhead protection areas have already been determined by the policies described in Chapter 3. In certain cases, where a locality has further subdivided the overall wellhead protection area into higher priority and lower priority areas, source inventory activities may be phased to focus on the higher priority area. Contamination source inventories should generally follow delineation activities to focus those efforts. The inventory stage may collect information from areas larger than the WHPA itself, depending on the geographic specificity of the available data bases cited above.

The general priorities for source inventory, if phasing is necessary, should be to focus on waste disposal sites, petroleum storage sites,

hazardous/toxic substance usage, storage and handling locations first, as most known public water supply well contaminations have been related to these sources. Out of the wide array of hazardous substance locations, first priority should be given to the chlorinated solvents, because these are the most common type of public water supply well contamination. Alternatively, higher priorities may be placed on inventorying sources of chemicals included in the New York State drinking water quality standard category known as "Principal Organic Contaminants" (10 NYCRR Part 5), which includes the chlorinated solvents and other high priority chemicals of concern to public water supplies.

#### 4.3. Completion, Refinement and Update of Contamination Source Inventory

A major goal of source inventory is to support the needs of a groundwater protection management program. Therefore, the ideal completion target for source inventory is prior to adoption or promulgation of groundwater protection ordinances or Watershed Rules and Regulations. The initial results of source inventory should be assessed prior to drafting such ordinances.

In some cases, as in complex commercial or industrial areas, phasing of source inventory activities will be necessary. The first level should be identifying industrial or commercial zones. More detailed phases may categorize the industrial or commercial land uses. The ideal, exhaustive inventory of all specific sources may not ultimately reside within a wellhead protection program data base. Rather, the most detailed data bases will reside with the appropriate regulatory program (e.g., petroleum bulk storage registry, etc.). Unnecessary duplication of efforts should be avoided.

The adoption of GIS mapping procedures will allow continuous updating of the source inventory. In the absence of GIS capabilities, printed or overlay updates will be completed at least every five years. Management program staff at the local and state level ordinarily maintain continuously updated files regarding regulated sources of contamination.

The Department of Environmental Conservation has initiated systematic inventories for several areas of the state by contracting with regional planning and development boards or councils utilizing Clean Water Act, Section 205(j)(5) pass-through funds. In eight different regions, the boards have selected municipal water supply systems and are inventorying contamination threats generally within a mile of the wells. This will be a beginning for a statewide system with some of the boards preparing their information in a GIS format as well as on 1:24000 maps.

For Nassau and Suffolk Counties on Long Island, Region 1 staff of DEC has been participating in a GIS user's group, comprised of representatives of federal, state, county, and local agencies. The group is building a shared data system which will result in an inventory of many groundwater contamination threats and of known groundwater quality problem areas in relation to public water supply wells. Additionally, the Long Island Regional Planning Board, in conjunction with other local agencies, is assessing major threats to groundwater as part of a comprehensive planning project for nine Special Groundwater Protection Areas covering large areas of Long Island.

## **CHAPTER 5**

### **SOURCE MANAGEMENT**

#### **5.1. Introduction**

Water resource protection programs in New York State have a long history. It was largely within the structure of New York State's existing programs and institutions that the state's groundwater management program was developed and it is within this structure that the Wellhead Protection Program will evolve. Adequate authorities and mechanisms for the Wellhead Protection Program already exist in New York State. There is not a need to modify existing legislation or regulations. The principal needs are for local governments (including counties) to obtain staff resources to further implement protection activities. Adoption of local ordinances may be needed as well as support from the state through technical assistance, financial assistance and training.

The foundation of nearly all groundwater protection programs is New York's stringent sets of standards and guidelines for ambient groundwater quality and drinking water quality. The standards themselves include broad classes of compounds, substantially reducing the possibility of unforeseen problems and the need for their revision. The availability of guidelines as a tool enables quick response to concerns with new substances. All fresh groundwaters in New York State are classified as potential sources of drinking water and are protected through statewide application of programs designed to prevent degradation with respect to these stringent standards. Anti-degradation goals are applied to all groundwater. It is important to recognize that groundwaters outside of wellhead protection areas are not left unprotected.

New York State has already adopted stringent protection programs for the most important categories of potential contamination sources. Certain nonpoint source categories are not directly controlled through specific state-level regulatory oversight (e.g., fertilizer applications, road salt applications). However, for these

source categories (and any source category) any harm (e.g., contamination) is actionable through "public nuisance", a long standing common law doctrine in New York State. Liability, therefore, does exist even for sources not directly regulated. In these cases, best management practices (BMPs) and other tools may be more viable than direct regulation. The New York State Nonpoint Source Management Program, a new effort, is designed to address these needs.

A complete identification and evaluation of all existing federal, state and local source management programs that have bearing on groundwater protection or potential contamination sources is far beyond the scope of this submittal or of any single work. Rather, major programs are briefly summarized in Section 5.2. Section 5.3. summarizes future source management considerations and management coordination.

#### **5.2. Existing Source Control Programs**

##### **5.2.1. Federal Agencies**

The USEPA is responsible for most of the major federal regulatory control programs for groundwater protection. These programs are given authority under the Clean Water Act (CWA), the Safe Drinking Water Act (SDWA), the Resource Conservation and Recovery Act (RCRA), Superfund (CERCLA), the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), and the Toxic Substances Control Act (TSCA). An overview of the coverage of these Acts is provided in Table 5.1.

EPA policy in administering these programs is generally to delegate many of the specific program activities to the states upon request and upon attainment of legislative requirements; to provide flexibility for states to tailor the programs to most effectively meet environmental needs within each state, to the extent permitted by statute; to oversee state performance in carrying out delegated national programs which use



Table 5.1

**OVERVIEW OF USEPA STATUTORY AUTHORITY  
RELATING TO GROUNDWATER**

<b>Clean Water Act</b>	Principal regulatory programs focus primarily on surface water. The Act contains only general references to groundwater. However, the Act provides major sources of funding for state water pollution control programs.
<b>Safe Drinking Water Act</b>	Authorizes EPA to set maximum contaminant levels and monitoring requirements for public water systems; provides for regulation of underground injection wells to protect drinking water aquifers; provides for designation of "sole source" drinking water aquifers; provides source of funding for state programs of public water supply regulation. Authorizes states to develop Wellhead Protection Programs.
<b>Resource Conservation and Recovery Act</b>	Provides for establishment of standards for hazardous waste treatment, storage, and disposal facilities; and requirements for ensuring that land disposal of solids or hazardous waste protects groundwater. Establishes the Federal Underground Storage Tank Program.
<b>Superfund (Comprehensive Environmental Response Compensation, and Liability Act of 1980)</b>	Creates a trust fund to provide for emergency clean-up of chemical spills or hazardous waste dumps for which no responsible party can be immediately found. Trust fund money is derived from taxes on oil and 42 other specific chemical compounds.
<b>Toxic Substances Control Act</b>	Authorizes EPA to restrict or prohibit the manufacture, distribution, or use of products which may adversely affect the environment.
<b>FIFRA (Federal Insecticide, Fungicide and Rodenticide Act)</b>	Gives EPA the responsibility to control the use of pesticides; specifically, EPA is responsible for registering, canceling, suspending, or changing the classification of individual pesticides for use, and considering a broad range of environmental impacts including impacts as groundwater.

federal grants; and to support the states through provision of technical expertise and research. The Underground Injection Control (UIC) program, a program not delegated to New York State, may benefit the Wellhead Protection Program through inventory activities, particularly for existing UIC Class V wells.

The DOH must also approve the subdivision of land when more than 4 new lots are created within a three-year time period and when the lots are smaller than 5 acres each. Through this review process, development within a protection zone of a public water supply well is strictly controlled or prohibited.

### **5.2.2 State Agencies**

The two state agencies with the major responsibility for managing potential threats to groundwater are the Department of Environmental Conservation (DEC) and the Department of Health (DOH).

#### **DEPARTMENT OF ENVIRONMENTAL CONSERVATION**

The DEC is responsible for administering a full array of environmental programs to be used in implementing the Wellhead Protection Program. An overview of these programs follows:

##### **SPDES**

The New York State Pollutant Discharge Elimination System (SPDES) is a program for the issuance of permits and regulatory control of discharges of appropriately treated sanitary, industrial, or commercial wastewater into the surface or groundwaters of the state. It is a comprehensive program for protecting water quality encompassing effluent limitations, monitoring requirements, and, for existing discharges not yet meeting effluent limitations, a schedule for achieving compliance. The SPDES Program is authorized by Article 17, Title 8 of the New York State Environmental Conservation Law (ECL) as amended in 1973. All groundwater discharges must

be permitted with the exception of those which are less than 1,000 gallons per day and are composed entirely of domestic wastewater.

##### **Petroleum Bulk Storage**

In effect since December 1985, the program regulates the storage and handling of petroleum. Major provisions of the program include registration of all stationary tanks over 1,100 gallons that store petroleum; establishment of standards for retrofitting; operation and closure of existing facilities; and establishment of standards for new and substantially modified petroleum facilities. The program is authorized by Article 17, Title 10 of the ECL.

##### **Hazardous Substance Storage and Handling (Chemical Bulk Storage)**

Phase I of the program (effective July 15, 1988) and Phase II (expected to be effective during 1991) will regulate the storage and handling of hazardous substances. Phase I requires the registration of all underground tanks and those aboveground stationary tanks storing 185 gallons (750 kilograms) or greater. Phase II will regulate the storage and handling of hazardous substances and include standards for dikes, piping systems, vents, transfer stations, monitoring, inventory record keeping, closure, container storage and the storage of bulk solids. The program is authorized under Articles 37 and 40 of the ECL.

##### **Spill Response**

The program, started in 1978, is designed to protect both public health and the environment from the effects of petroleum and chemical spills and leaks. Major components of the program include reporting requirements, a 24-hour hotline telephone/response network, on-site response by regional staff, stand-by

clean-up contractors, a data management system, and coordination with the other public agencies. The program also provides assistance to local governments in emergency planning related to spills and leaks and monitors compliance with Superfund Amendments and Reauthorization Act Title III requirements. The Department maintains geotechnical services to assist the program, both in the central office and in regional offices. The program is authorized by Article 12 of the Navigation Law.

#### • Water Supply Permits

The Water Supply Permit Program, also discussed in Chapter 7, is primarily a quantity management program. However, it indirectly controls potential contamination sources by controlling the influences on groundwater flow. The most important is the control on intrusion of naturally-occurring saline groundwater. The program is authorized by the ECL Article 15, Title 15 and is regulated under 6 NYCRR Parts 601 and 602.

#### • Flood Plain Management

The program, which is consistent with the Natural Flood Insurance Program, includes performance standards for water supply systems. Water systems within the 100-year flood plain are required to be designed to minimize or eliminate infiltration of flood waters into the systems. Over 1,350 cities, towns and villages in New York State have adopted local laws containing the federal standards for flood protection of water supply systems. In addition, the state flood plain regulations (6 NYCRR Part 500) are applicable within 136 towns and villages. The New York State Flood Plain Management Program maintains an outreach and education effort to assist local governments in implementing flood protection, including water supply protection. The program is authorized by ECL Article 36.

#### • Municipal Solid Waste

The program regulates the collection, transport, processing, incineration and ultimate disposal of municipal solid waste. Pertinent landfill requirements include: limitations on acceptance of hazardous waste; geological siting standards, including a minimum vertical separation between the base of the constructed landfill liner and groundwater of five feet and between the base of the constructed landfill liner and bedrock of ten feet; environmental monitoring of facilities; engineering standards, including design provisions for impermeable liners and leachate collection systems to restrict subsurface migration of contaminants and closure provisions for low permeability caps to minimize infiltration in the waste mass and subsequent leachate generation; and hydrogeologic siting restrictions on new landfills and landfill expansions including prohibitions within public water supply wellhead areas and primary and principal aquifers. The program is authorized by the ECL, Article 27.

#### • Hazardous Waste Management

The program regulates the entire scope of industrial and commercial hazardous waste management. Hazardous wastes are identified, regulated at the point of generation, tracked in transport from generation to point of ultimate disposal, and regulated with regard to treatment, storage and disposal. The siting of new facilities for off-site treatment, storage and disposal (i.e., those facilities receiving hazardous waste from other facilities) must conform to stringent siting requirements in accordance with 6 NYCRR Part 361. The overall program is authorized by the ECL, Articles 19, 23 and 27.

#### Hazardous Waste Remediation

The program deals with the problems associated with inactive hazardous waste sites. The three major aspects of the program include identifying, evaluating and remediating hazardous waste sites. The 1986 Environmental Quality Bond Act provided the program with access to \$1.2 billion for remediation costs. The program is authorized by the ECL, Article 27, Title 13.

#### Low Level Radioactive Wastes

The program develops and implements low-level radioactive waste regulations, reviews permit applications for radioactive waste discharges, issues permits for transporters of low-level radioactive waste, provides technical support on low-level radioactive waste and assists in the siting of a low-level radioactive waste disposal facility. The program is also responsible for oversight of ground and surface water quality at extant disposal sites such as West Valley, New York, and potential new sites such as the proposed low-level radioactive disposal facility. The existing siting regulations ban new sites overlying primary and principal aquifers and require evaluation of potential groundwater impacts in all other areas. The program is authorized by the ECL, Articles 27 and 29.

#### Pesticides

Under the state program, pesticides must be registered, and a permit is required for the distribution, sale, or offer-for-sale of "restricted use" pesticides, as defined by DEC. A permit is also required for the purchase, possession, or use of these products, and all applicators must be certified. The primary emphasis of the program is on the certification of pesticide users and on issuing permits to distributors of "restricted use" products. Nearly all pesticides registered in New York State have been previously

registered by EPA. The existing registration procedure in New York State relies heavily on EPA review, supplemented by additional state DEC and DOH review. The USEPA's pesticide registration procedures include the evaluation of a variety of chemical characteristics, such as water solubility and chemical persistence, relating to potential leaching to groundwaters. The New York State program is authorized by the ECL, Articles 15 and 33.

#### Mineral Resource Extraction

The DEC administers New York State's Mined Land Reclamation Program under Article 23, Title 27 of the ECL. The program involves the permitting of all mining operations in the state from which more than 1,000 tons of mineral are extracted within twelve successive calendar months. DEC's rules and regulations require the preparation and filing of plans and, through the process of an application review and field inspection, the determination that the mining operation will be conducted in an environmentally sound manner and that upon completion of mining, the affected land will be returned to a condition which encourages future productive use. Provisions for protection of ground and surface waters from potential adverse impacts of mining activity are included within the program.

#### Oil and Gas Program

The program regulates the drilling, operation, and plugging and abandonment of oil, natural gas, underground gas storage, solution salt mining, brine disposal, geothermal and stratigraphic wells. Pertinent parts of the program include inspections of operations and facilities; financial security requirements that ensure availability of funds for well plugging and surface restoration costs; well construction and plugging requirements; drilling,

completion and production requirements; and the imposition of supplementary permit conditions for all drilling in primary and principal aquifers and other environmentally sensitive areas. The program is authorized under the ECL, Article 23.

## DEPARTMENT OF HEALTH

The New York State Department of Health is responsible for the protection of public health and assuring provision of potable public water supplies. While most of the DOH's water supply program attention is on water delivered to the consumer, the Public Health Law authorizes the Commissioner of Health to promulgate rules and regulations for the protection of any public water supply from contamination. It is under this authority that the DOH's Watershed Rules and Regulations Program is based. Under the program, the DOH enacts state regulations to protect a specific water supply upon request from the water supplier. Existing and proposed Watershed Rules and Regulations for groundwater sources limit specific activities and prohibit potential sources of contamination from locating within specifically defined areas and may include design specifications for groundwater protection for new facilities allowed in the areas. The level of protection for each area reflects the vulnerability of the source to contamination by activities within the area. Watershed Rules and Regulations are considered to be fully compatible with the Wellhead Protection Program.

### 5.2.3. Local Government

#### COUNTY GOVERNMENT

County health agencies in many of the counties in New York State assist, through delegation, in administering major elements of state level (DEC and DOH) programs for water pollution control and water supply regulation. In some cases, county health agencies administer more comprehensive overall programs than those administered by the state. One example is Suffolk County, which provides for enhanced regulation of the storage and handling of toxic and hazardous chemicals. A similar program is also

provided by Nassau County. In such cases, county health agencies perform the bulk of the day-to-day activities required for groundwater management, either through delegation from the state or directly under their own statutory authority. Although these counties have more extensive programs than most Upstate New York counties, they illustrate the important role potential for county health agencies in groundwater management.

An important management role may also be assumed by county planning departments, either through overall coordination of groundwater protection activities among towns or through direct assistance in drafting ordinances or other activities. Among the examples are Schenectady County and Cortland County.

Each county also maintains a County Emergency Management Office as part of the statewide network of emergency planning, data management and response. Their activities are an integral part of local wellhead protection efforts.

A key management issue for counties is to evaluate the potential adoption of county-wide groundwater protection ordinances. Such approaches may be more efficient than town-by-town ordinance implementation. Examples where this has been utilized include counties on Long Island.

#### TOWNS, CITIES AND VILLAGES

Municipal and town governments have two significant management tools that can be used to provide protection of groundwater and wellhead areas - land use controls and municipal or town ordinances. Under state law, towns, cities and villages are vested with the power to regulate land use. By the home rule provisions of New York State law, the state government will not impose zoning controls and land use requirements on local governments. The enactment of land use controls or zoning allows a municipality to prescribe the type of permitted land use and related activities in a specific land area. Thus, it can prohibit inappropriate land uses such as industrial use in sensitive groundwater areas.

while allowing more appropriate land uses. Within this framework, the site plan review mechanism may be used to require specific engineering designs to protect groundwater for an allowed land use. In addition to zoning, municipalities can adopt local ordinances to control or prohibit activities which may contaminate groundwater such as sewage disposal, hazardous material storage, etc. The development of zoning ordinances and other groundwater protection ordinances at the local government level is voluntary. Statewide groundwater protection controls prevail in all areas. In New York State, the Office of Local Government Services of the Department of State provides training and guidance to local officials in the use and development of zoning and site plan review.

### WATER PURVEYORS

The groundwater management activities of water purveyors, whether municipally-owned or privately-owned, are described in Chapter 2, under "Public Water Supply Systems". Briefly, these include compliance with conditions of the water supply permit, initiation and development of optional Watershed Rules and Regulations for submittal to the state DOH, and consumer and water-user education. Because of their exclusive responsibility for providing a potable water supply, water purveyors can and should play a central role in motivating other local officials to implement groundwater protection efforts, and motivating the general public to assist in the effort.

#### 5.2.4. Existing Technical Assistance Program

Technical assistance is available for local governments and water purveyors from a variety of sources. This assistance varies from basic information about groundwater resources to assistance with data interpretation and analysis.

##### ◀ Groundwater Reports and Maps

The Division of Water maintains a limited inventory of reports and maps which are available for loan or possession. In some cases, when a particular item is scarce and cannot leave the office, citations are provided for library searches.

The USGS also has much of the same information.

##### ◀ Source Data from Regulatory Programs

Data regarding the potential contamination sources controlled by the various programs described in Section 5.2.2., above, are available to local management agencies. The nature, size, and location of the facility, in addition to requirements imposed by permits, can be retrieved on request. There are limitations with the ease of retrieval and with the locational information, as discussed in Chapter 4.

##### ◀ Technical Assistance

Assistance from geologists in the Division of Water is available on a limited basis to interpret and analyze groundwater information. This can include modelling of groundwater flow.

##### ◀ Data Acquisition and Interpretation

The Division of Water maintains a cooperative program with the USGS whereby water resources data are collected, organized, and interpreted. Information developed in this program can be used in the creation of local wellhead protection programs.

##### ◀ Other Data Sources

Other types of useful data are available from such sources as county Soil and Water Conservation Districts (soils, land use) and the NYS Geological Survey (geology). Various data sets are available in a geographic information system format through the State Office of Equalization and Assessment.

#### 5.2.5. Existing Financial Assistance Programs

##### ◀ Section 205(f) Funds

NYSDEC has contracted with a number of regional planning and development agencies to undertake a series of demonstration projects in association with the Wellhead Protection Program.

The projects include collection and information on public groundwater supplies, inventorying and mapping contamination threats, and meeting with local officials to explore the development of local protection programs.

- New York State Environmental Quality Bond Act of 1986

The Act provides money for acquisition of aquifer recharge areas when in association with an appropriate local groundwater protection program.

- Nonpoint Source Control Program

Under both the federal Section 319 Program and the state-enacted Nonpoint Source Law, there is the potential for funding wellhead protection activities.

- Federal Clean Water Act - Section 106 Funds

The 1990 appropriation of 106 funds provides monies for wellhead protection.

#### 5.2.6. Existing Education and Training Programs

Education and training activities are carried out by a number of agencies through publication and distribution of guidance materials, presentations at meetings, and direct "one-on-one" assistance.

NYSDEC has underwritten the preparation of a document for guiding the development of local water supply protection programs and distributes it on request and at relevant workshops. The NYSDOH provides guidance on the writing of watershed rules and regulations, which are a primary tool for implementing water supply protection measures. The State Water Resources Institute at Cornell University (WRI) produces written materials and computer software products to provide self-help support to local government. The NYS Department of State distributes a range of guidance manuals on zoning, site plan review, and other aspects of land use control and instructs local officials on these tools at statewide and regional conferences and workshops.

Presentations on wellhead protection options are made by DEC staff at such places as the meetings of the NYS Planning Federation and the Association of Towns of New York State where training workshops for local officials are held. WRI stages short courses and training sessions as part of their educational programs.

Finally, direct assistance is provided by NYSDEC and WRI as resources are available and as demand exists.

#### 5.3. Future Management Considerations

Given the variety and extent of programs available at the federal, state and local level, there are no uncontrolled sources of contamination for wellhead areas. The basic structure exists for addressing all formats.

The primary task for the future is to bring the available program tools to bear on the threats to wellheads. This will be accomplished as a result of increased recognition of threats, outreach and training programs to inform government officials at all levels concerning control options, further development of information on groundwater resources, and development of efforts to focus particular attention of existing programs on wellhead areas.

The future management considerations for wellhead protection areas may be divided into state-level activities and local government activities. In New York State, the principal needs for state-level activities do not entail developing new legislation or regulations, as the existing structure is essentially adequate for protection of all fresh groundwaters, including the wellhead protection areas. The true needs are in more comprehensive implementation of the existing groundwater protection programs and carrying out the remaining implementation recommendations of the adopted Groundwater Management Program relevant to wellhead protection.

Local government activities have a broader range of future management considerations, because current activities are not usually as highly developed as the state-level protection programs.



The needs range from coordination and education to developing, implementing and enforcing the appropriate mix of land use controls and contamination source controls. Generally, the greatest need is implementation and enforcement staff development. Local groundwater and wellhead area protection plans and ordinances, including the preparatory delineation and source inventory, will have little benefit if implementation and enforcement staff resources are inadequate. Education and provision of guidance to local governments are important responsibilities of the state programs.

The key recommendation to local governments in developing wellhead protection management is to first assess local needs and goals for groundwater protection. As part of this process, local officials should familiarize themselves with the basics of the existing groundwater protection efforts at all levels of government and establish a communication and coordination "network" with the many parties that may assist them. These include county health and planning officials, regional planning agencies, DEC, DOH, Soil and Water Conservation Districts, Cooperative Extension, and many of the other parties cited in this document. The importance of communication cannot be overemphasized. Local officials would benefit from the experience of other communities within the state, and such communication is also encouraged.

From this needs and goals assessment, and from a basic knowledge of available state programs and local management options, local officials can best select a preferred "framework" and general plan for local wellhead protection (e.g., Watershed Rules and Regulations, zoning, local ordinances, county ordinances, etc.).

The basic stages of a wellhead protection effort described in the Safe Drinking Water Act (e.g., delineation refinements, inventory, etc.) should be executed within this framework. It is anticipated that localities could waste considerable resources if they proceed directly into advanced delineation refinements or inventories without doing any preliminary goal assessment or coordination with other groundwater management officials.

The following sections briefly highlight three aspects of wellhead protection management relevant to future program considerations.

### **5.3.1. State Environmental Quality Review (SEQR)**

SEQR is a mechanism available to all levels of government within the state to enable consideration of environmental factors early in the planning stages. It relates to actions which are undertaken, funded or approved by state, regional and local government agencies.

A particularly important feature of SEQR for wellhead protection and groundwater management is the provision for designation of Critical Environmental Areas. Local governments may designate specific geographical areas within their boundaries as Critical Environmental Areas. The designated areas become part of the Statewide "TYPE I" list under SEQR, meaning that any state or local agency action within or contiguous to the area will be more likely to be considered significant and therefore require an environmental impact statement and full review. This provision has strong potential for application in areas with sensitive groundwater resources, especially wellhead protection areas. The Department of Environmental Conservation's Division of Regulatory Affairs oversees the SEQR program and provides training and assistance concerning SEQR procedures.

### **5.3.2. Options and Tools for Protection Program Enhancement**

The options and tools for protection program enhancement may have applicability in both state-level and local government programs. They include both regulatory and non-regulatory approaches. The following review is necessarily brief. Further details are available through the appropriate programs (e.g., zoning assistance from Department of State, emergency planning from State Emergency Management Office and DEC, source reduction from DEC Resource Recovery Program and Pollution Prevention Program, etc.). Among the options and tools are:

**Engineering Design:** New facilities may be designed, or existing facilities may be retrofitted, with specific groundwater protection barriers or controls that enable continued operation or siting of facilities. Examples include: secondary and/or tertiary containment for petroleum or hazardous materials storage; structural coverage of stockpiles; leak detection systems; etc. Approaches may include special permitting, performance standards, septic system upgrades, and other methods. Continued enforcement is needed for these approaches.

**Source Reduction:** A wide range of management options may be titled source reduction. Existing facilities may continue to operate with emphasis on reducing the threat to groundwater by methods that supplement prohibitions and engineering design. Among the source reduction options are: (1) reducing quantities of chemicals used; (2) conversion to lower-risk alternative chemicals; (3) modifying methods of use to increase efficiencies, including better targeting of applications (e.g., pesticides, coatings, cleaning operations); (4) waste reduction and recycling; (5) updating equipment, replacing storage tanks and container, and more frequent equipment calibration and inspection; (6) improving site plan and layout to reduce accident probability; and (7) improving site to reduce rainfall or runoff entering critical areas. There are many other options. Education and specifically targeted technology transfer and outreach (e.g., material prepared for specific types of businesses) are important tools in source reduction. Approaches may include both voluntary and mandatory elements.

**Inspections and Testing:** Increasing the frequency or intensity of inspections and testing of facilities and operations is a straightforward approach to enhancing protection. Options for managing the costs of these approaches should be explored, including the potential for

utilizing consulting "environmental monitors" as inspectors, funded by a fee system.

**Reporting:** More frequent or more detailed reporting requirements for specific facilities and operations is a potential protection tool. However, this option is only useful to the extent that the information can be evaluated and properly stored, and that appropriate responses can be carried out. Staff resources for public agencies is again an important concern. The key need is for improvements in electronic data management, automated transfers of information, developing automated interpretive techniques, and in quality assurance efforts. Improved accuracy and completeness of reporting is an important concern. Solutions may include redesign of reporting requirements and formats and improved guidance.

**Prohibitions:** Prohibitions are evaluated based on the relative risk of the facility or operation and the availability of engineering design alternatives. Prohibitions may also target specific chemicals themselves, such as solvent septic tank cleaners, rather than entire types of land use. Prohibitions may be adopted as part of Watershed Rules and Regulations, zoning ordinances, or other municipal, county or state ordinances.

**Land Use Controls:** Land use controls include other options and tools beside prohibitions. Zoning density changes for residential development may be used. Transfer of development rights, whereby certain commercial or industrial development rights are transferred outside of wellhead protection areas (or portions of the overall WHPA) or designated groundwater protection districts, is another tool. Cluster or planned unit development (PUD) design may also be used to guide residential development outside of more sensitive

groundwater areas or to allow better management of wastewater disposal and nonpoint sources. Various growth controls may be utilized to allow more comprehensive development of local groundwater and wellhead protection programs. Subdivision rules may be used to better control drainage and runoff in subdivisions in sensitive groundwater areas. Site plan review may be utilized to require engineered contamination prevention barriers and other designs for permitted development. These opportunities provide a diverse menu of tools that enable more sophisticated local protection programs than generalized land use prohibitions.

- ◀ **Water Withdrawal Controls:** Water withdrawal controls are commonly recognized as a primary tool for water quantity management, but they also may play a role in water quality management. The DEC Water Supply Permit Program, described in Chapter 7, regulates water withdrawals for both objectives. Water withdrawal management is particularly important for controlling saltwater intrusion in coastal areas, for controlling the influences of withdrawals on migration of contaminants from nearby contamination plumes or contaminated aquifers (in multiple aquifer systems), and for altering groundwater flow patterns and consequently the relevant shapes and sizes of existing wellhead protection areas.

- ◀ **Monitoring:** Groundwater sample collection and analysis is a potential option associated with others cited above. Monitoring is useful to the extent that the sampling is truly representative of the groundwater regime of concern, that frequency is adequate, that data variability does not prevent determination of actual contamination, and that reported data are managed in a retrievable and interpretable fashion. The greatest potential for monitoring applications is in "source monitoring";

that is, monitoring at or very close to known high priority potential contamination sources. Generalized ambient monitoring of aquifers or wellhead protection areas (i.e., not targeting a potential source or the water supply well itself), sometimes called "early warning monitoring", may be conceptually desirable but is very likely to be impractical and very inefficient if attempted for all systems. It may be appropriate in special circumstances. The major problem is that truly representative sampling would require many locations, several depths at each location, frequent sampling, and many chemical constituents. Data variability and statistical interpretations are serious concerns in properly using monitoring results. Associated with this is the major burden of well installation, hydrogeologic characterization, proper sample collection and handling, and data management. The total analytical costs, themselves, would be enormous. Although ambient monitoring can have special value in specific locations and in research, the total resources for universal adoption would be far better spent on other options cited above to achieve greater degrees of groundwater protection.

- ◀ **Emergency Planning:** Emergency planning is an ongoing activity to plan for response to accidents, spills, and other emergencies. The principal goal in this case is to facilitate the fastest, most efficient and most effective proper response to emergencies that threaten groundwater quality. The existing emergency planning and response programs can be enhanced by various options including: (1) requiring risk management and emergency planning for a wider range of facilities or operations than at present; (2) requiring clearly visible posting at all facilities of key contacts (owners/operators, hazmat response teams, standby cleanup contractors, fire departments, etc.); (3) fire department preplanning for responses

at all important facilities; and (4) instituting county or regional hazmat (emergency response) teams to assist in local emergencies. The keys are speed and appropriate response. Any approach that enhances these may have potential. Facilities and industries may have standby emergency cleanup contractors that can mobilize faster than state government contractors. Local authorities should maintain records of these cases. Knowledge of who to contact is a critical concern.

• Land Acquisition and Conservation Easements: Land acquisition is the most effective method for ensuring control of sensitive groundwater areas. However, it is very urgent that lands acquired for such purposes not be misused for government activities which represent potential contamination threats (e.g., waste disposal, petroleum storage, salt storage, etc.). Donations and conservation easements should also be explored. The passage of a special additional 0.25% sales tax by a public vote in Suffolk County to provide funds for land acquisition should demonstrate the interest and concern of citizens to support this approach.

• Best Management Practices (BMPs) and Guidance: To supplement regulatory oversight, best management practice documents and other types of guidance may be developed and distributed to specifically targeted types of facilities or operations, concerning risk reduction and other forms of protection against groundwater contamination. These approaches may require follow-through, redistribution and special training to maintain or enhance their effectiveness.

• Education, Guidance and Technical Assistance: Citizen education, guidance for local government officials and technical assistance have obvious benefits for enhancing wellhead protection efforts. Despite this generally

accepted notion, the potential cost savings by providing well targeted guidance are often overlooked. Good guidance will avoid unnecessary costs and overspending on less important elements, and, most importantly, can save considerably by getting the job done right much more quickly. Technology transfer and training assistance are key areas where a state-federal partnership can improve local protection programs. Road sign posting of protection areas may be a useful approach to promote public recognition of wellhead protection.

• Coordination: Directly related to the issue of guidance and assistance is the subject of coordination at all levels of government. In New York State, the level of government which generally has the greatest potential for enhancing groundwater protection through coordination is the county level. County agencies are best suited to assist their towns and villages directly and frequently. They are also an excellent link with state agencies. It is most cost-efficient for towns, villages and small cities to rely on county staff for groundwater coordination. Counties which have developed this capability in either their health or planning agencies (or in environmental agencies, if they exist) have benefitted considerably. The skills that may be tapped or developed at this level include both technical skills (hydrogeology, environmental chemistry, environmental engineering) and management skills (ordinance drafting, public speaking and writing, enforcement techniques). Coordination is further discussed in the following section.

### 5.3.3. Jurisdictional Coordination in Wellhead Protection Areas

As with most facets of government and public authority, multi-jurisdictional issues may occur with wellhead protection areas. Given the existing governmental structure in New York State, the

locations of public water supply wells, and other factors (existence and nature of federal lands, the nature and extent of aquifers, availability of State Watershed Rules and Regulations, etc.), significant problems are considered to be unlikely.

First, one means for resolving multi-jurisdictional issue among municipalities or counties is the promulgation of Watershed Rules and Regulations. Coordination is directly achieved through promulgation of the regulations, which are considered by New York State to represent an acceptable wellhead protection program.

County government is generally strong in New York State and a significant portion of multi-jurisdictional coordination is achieved directly by county agencies. Among counties, coordination is achieved through several avenues. First, regional planning agencies are well established in New York State and have been increasingly involved with groundwater protection in recent years. Second, the State Department of Environmental Conservation, in particular, and the State Department of Health have strong regional presence in New York State with responsibilities for local coordination with both counties and municipalities. Finally, coordination is provided by a wide range of assisting associations and agencies (including the Association of Towns, Association of Counties, Conference of Mayors, New York Planning Federation, Cooperative Extension, Soil and Water Conservation Districts, Water Resources Institute, etc.).

Concerning international jurisdictional issues, problems are nonexistent because public water supply wells in the general border area are extremely rare. Those located there would have appropriate protection areas entirely within New York State.

Nearly the same conditions occur along the interstate borders. Interstate coordination has not been a problem with respect to groundwater. In the event that such coordination is needed, New York's interstate borders are covered by the following interstate compacts of which New York is a member:

- ◀ New England Interstate Water Pollution Control Commission (NEIWPCC)
- ◀ Ohio River Valley Water Sanitation Commission (ORSANCO)
- ◀ Susquehanna River Basin Commission (SRBC)
- ◀ Delaware River Basin Commission (DRBC)

Federally-owned land is very limited in New York State, and the occurrence of public water supply wells on or in the vicinity of federal land is very rare. Coordination with other federal agencies concerning wellhead protection will be accomplished by the Department of Environmental Conservation working through the U.S. Environmental Protection Agency - Region II Office, and direct interaction with the federal authorities on-site where possible. This approach has been successful in the past and no problems are anticipated.

#### 5.4. Summary

A simplified summary of existing institutions responsible for management of potential groundwater contamination sources is presented in Table 5.2.

TABLE 5.2

## EXISTING INSTITUTIONAL RESPONSIBILITIES FOR SOURCE MANAGEMENT

SOURCE	INSTITUTIONS (See Key)
<p><b>CATEGORY 1: <u>Sources Designed To Discharge Substances</u></b></p> <ul style="list-style-type: none"> <li>- Subsurface percolation (e.g., septic tanks and cesspools)</li> <li>- Injection wells               <ul style="list-style-type: none"> <li>. Hazardous waste</li> <li>. Non-hazardous waste (e.g., brine disposal and drainage)</li> <li>. Non-waste (e.g., enhanced recovery, artificial recharge solution mining and in-situ mining)</li> </ul> </li> <li>- Land application               <ul style="list-style-type: none"> <li>. Wastewater (e.g., spray irrigation)</li> <li>. Wastewater by-products (e.g., sludge)</li> <li>. Hazardous waste</li> <li>. Non-hazardous waste</li> </ul> </li> </ul> <p><b>CATEGORY 2: <u>Sources Designated to Store, Treat, and/or Dispose of Substances; Discharge Through Unplanned Release</u></b></p> <ul style="list-style-type: none"> <li>- Landfills               <ul style="list-style-type: none"> <li>. Industrial hazardous waste</li> <li>. Industrial non-hazardous waste</li> <li>. Municipal Sanitary</li> </ul> </li> <li>- Open dumps, including illegal dumping (waste)</li> <li>- Residential (or local) disposal (waste)</li> <li>- Surface impoundments               <ul style="list-style-type: none"> <li>. Hazardous waste</li> <li>. Non-hazardous waste</li> </ul> </li> </ul>	<p>CHD*, DOH*, MUN</p> <p>DOH*, EPA*, DEC DEC*, DOH*</p> <p>DOH</p> <p>DEC* DEC* DEC* DEC*, DOH</p> <p>DEC*, DOH*, EPA*, CHD*, MUN DEC*, CHD*, DOH, EPA, MUN DEC*, CHD*, MUN*, EPA</p> <p>DEC*, CHD*, DOH, MUN</p> <p>DEC*, CHD*, MUN</p> <p>DEC*, CHD*, DOH DEC*, CHD*, DOH</p>

**TABLE 5.2**  
**EXISTING INSTITUTIONAL RESPONSIBILITIES FOR SOURCE MANAGEMENT**  
(Continued)

SOURCE	INSTITUTION (See Key)
<ul style="list-style-type: none"> <li>- Waste tailings</li> <li>- Waste piles <ul style="list-style-type: none"> <li>. Hazardous waste</li> <li>. Non-hazardous waste</li> </ul> </li> <li>- Materials stockpiles (salt, coal, etc.)</li> <li>- Graveyards</li> <li>- Animal burial</li> <li>- Aboveground storage tanks <ul style="list-style-type: none"> <li>. Hazardous waste</li> <li>. Non-hazardous waste</li> <li>. Non-waste (petroleum, etc.)</li> </ul> </li> <li>- Underground storage tanks <ul style="list-style-type: none"> <li>. Hazardous waste</li> <li>. Non-hazardous waste</li> <li>. Non-waste (petroleum, etc.)</li> </ul> </li> <li>- Containers <ul style="list-style-type: none"> <li>. Hazardous waste</li> <li>. Non-hazardous waste</li> <li>. Non-waste</li> </ul> </li> <li>- Open burning and detonation sites</li> <li>- Radioactive disposal sites</li> <li><b>CATEGORY 3: <u>Sources Designed to Retain Substances During Transport or Transmission</u></b></li> <li>- Pipelines <ul style="list-style-type: none"> <li>. Hazardous waste</li> <li>. Non-hazardous waste</li> <li>. Non-waste (petroleum, etc.)</li> </ul> </li> </ul>	<p style="text-align: center;">DEC*</p> <p style="text-align: center;">DEC*, DOH*, CHD*, EPA  DEC*, CHD*, DOH</p> <p style="text-align: center;">DEC*, CHD*, DOT, MUN, DOH</p> <p style="text-align: center;">DOH*, CHD*</p> <p style="text-align: center;">DOH*, DEC*</p> <p style="text-align: center;">DEC*, MUN, CHD  DEC*, MUN, CHD  DEC*, MUN, CHD</p> <p style="text-align: center;">DEC*, MUN, CHD  DEC*, MUN, CHD  DEC*, MUN, CHD</p> <p style="text-align: center;">DEC*, MUN, CHD  DEC*, MUN, CHD  DEC*, MUN, CHD</p> <p style="text-align: center;">DEC*, CHD*, MUN</p> <p style="text-align: center;">DEC*, DOH*, MUN</p> <p style="text-align: center;">DEC*  DEC*  DEC*</p>



**TABLE 5.2**  
**EXISTING INSTITUTIONAL RESPONSIBILITIES FOR SOURCE MANAGEMENT**  
**(Continued)**

SOURCE	INSTITUTION (See Key)
<ul style="list-style-type: none"> <li>- Materials transport and transfer operations               <ul style="list-style-type: none"> <li>. Hazardous waste</li> <li>. Non-hazardous waste</li> <li>. Non-waste (petroleum, etc.)</li> </ul> </li> </ul>	DEC*, DOH DEC*, DOH, MUN DOT*, DEC
<b>CATEGORY 4: <u>Sources Discharging Substances as a Consequence of Other Planned Activities</u></b>	
<ul style="list-style-type: none"> <li>- Irrigation practices (e.g., return flow)</li> </ul>	CE, SWCD
<ul style="list-style-type: none"> <li>- Pesticide applications</li> </ul>	DEC*, DOH, CE, SWCD
<ul style="list-style-type: none"> <li>- Fertilizer applications</li> </ul>	CE, SWCD
<ul style="list-style-type: none"> <li>- De-icing salts applications</li> </ul>	DEC, DOT, MUN
<ul style="list-style-type: none"> <li>- Urban runoff</li> </ul>	DEC, MUN
<ul style="list-style-type: none"> <li>- Percolation of atmospheric pollutants</li> </ul>	DEC*
<ul style="list-style-type: none"> <li>- Mining and mine drainage               <ul style="list-style-type: none"> <li>. Surface mine-related</li> <li>. Underground mine-related</li> </ul> </li> </ul>	DEC*, SWCD DEC*, SWCD
<b>CATEGORY 5: <u>Sources Providing Conduit or Inducing Discharge Through Altered Flow Patterns</u></b>	
<ul style="list-style-type: none"> <li>- Production wells               <ul style="list-style-type: none"> <li>. Oil (and gas) wells</li> <li>. Geothermal and heat recovery wells</li> <li>. Water supply wells</li> <li>. Solution Mining Wells</li> </ul> </li> </ul>	DEC* DEC* DOH*, DEC*, CHD*, MUN* DEC*

**TABLE 5.2**  
**EXISTING INSTITUTIONAL RESPONSIBILITIES FOR SOURCE MANAGEMENT**  
**(Continued)**

SOURCE	INSTITUTION (See Key)
<ul style="list-style-type: none"> <li>Other wells (non-waste)</li> <li>Monitoring wells</li> <li>Exploration wells</li> </ul>	<p>DEC, DOH, CHD DEC*, DOH</p>
<ul style="list-style-type: none"> <li>Construction excavation</li> </ul>	<p>MUN*, DEC, SWCD</p>
<p><b>CATEGORY S: <u>Naturally occurring Sources</u></b>  <u>Whose Discharge Is</u>  <u>Created and/or Exacer-</u>  <u>bated by Human Activity</u></p>	
<ul style="list-style-type: none"> <li>Groundwater-surface water interactions</li> </ul>	<p>DEC*</p>
<ul style="list-style-type: none"> <li>Natural leaching</li> </ul>	<p>DEC*</p>
<ul style="list-style-type: none"> <li>Saltwater intrusion brackish water upconing (or intrusion of other poor quality natural water)</li> </ul>	<p>DEC*</p>

**KE:** ' = Major Responsibility

- CE = Cooperative Extension
- CHL = County Health Departments
- DEC = NYS Department of Environmental Conservation
- DOH = NYS Department of Health
- DOT = NYS Department of Transportation
- EPA = U.S. Environmental Protection Agency
- MUN = Municipal Government
- SWCD = Soil and Water Conservation District

**Absence of a designation does not preclude additional or related responsibilities of similar or other local, state or federal institutions.**

## **CHAPTER 6**

### **CONTINGENCY PLANNING**

#### **6.1. Introduction**

In New York State, the Department of Health, through the authorities provided to it in the Public Health Law (PHL), oversees and regulates the development of contingency or emergency plans for public water systems. In addition, the New York State Division of Military and Naval Affairs, Office of Disaster Preparedness, oversees and coordinates the stockpiles of emergency equipment that are available to assist in responding to public water supply emergencies.

The federal Safe Drinking Water Act requirements for contingency planning (Subsections 1413(b)(5) and 1428(a)(5)) are satisfied by the program administered by the Department of Health. An additional aspect of contingency planning is required under the federal Superfund Amendments and Reauthorization Act (SARA) Title III. The SARA emergency planning program, which requires reporting of routine and accidental releases of toxics to air, water and land, is administered by the New York State Department of Environmental Conservation. In actual practice, this program is most useful for indicating potential problem areas. Response to immediate public water supply threats is coordinated with DOH and water suppliers.

#### **6.2. Emergency Planning Program**

The new emergency (or contingency) planning program administered and coordinated by the New York State Department of Health contains all four elements suggested by USEPA for consideration by states in the Wellhead Protection Program along with additional items. The first two elements, temporary and long-term alternate water supply assessment, are included in the DOH requirement for identification of existing and future water supply sources in both emergency and non-emergency conditions. The final two, coordination and financial responsibility assessment, are included in the DOH requirement for specific action plans. The key responsibilities

are with the water purveyor, with oversight by the New York State Department of Health.

On September 24, 1988, revisions to Section 5-1.33 of Part 5 of the New York State Sanitary Code were promulgated. This section entitled "Water Supply Emergency Plans" requires the following:

1. All community water systems with an annual gross operating revenue of greater than \$125,000 must develop and submit to the state a water supply emergency plan by December 31, 1990 and update the plan every five years.
2. The plan must include at a minimum:
  - The development of procedures for providing consumer notification during all phases of the water supply emergency;
  - The development of criteria and procedures for determining the subsequent reporting of critical water levels of safe yield of the source or sources of water;
  - The identification of existing and future sources of water available during normal non-emergency and water supply emergency conditions;
  - The identification of all available water storage, including source, transmission and distribution system storage;
  - The identification, capacity and location of existing interconnections. Identification of additional interconnections needed to provide potable water during a water supply emergency;
  - The development of a specific action plan outlining all the steps to be implemented, taken or followed during a water supply

emergency, including state notification, emergency notification rosters of key water supply personnel with current telephone numbers (both business and home), and follow-up correction action to minimize the reoccurrence of an emergency;

- The Identification and Implementation of procedures for water conservation and water use restrictions to be put in place during a water supply emergency;
  - The Identification of and the procedures for prioritization of potable water use during a water supply emergency;
  - The Identification of availability of emergency equipment needed during a water supply emergency;
  - A development of criteria and procedures for determining and the subsequent reporting of the water supplier's capacity and ability to meet peak water demands and fire flow conditions concurrently.
3. A vulnerability assessment must be performed for the source or sources of water supply, the public water system, disinfection stations and water treatment plants to determine the vulnerability of these water supply components to a water supply emergency. The water supplier shall take whatever steps are necessary to ensure that potable water can be and is available during a water supply emergency.
  4. The state can require any other community or non-community water system to develop emergency plans.

The NYS Department of Health currently is revising its guidance available for use by public water systems in developing their emergency plans. It is not expected that the revised guidance will deviate significantly from the existing guidance. The existing guidance includes a generic outline or framework of worksheets and checklists that will assist the water system in developing its plan. This outline includes topics

such as: map of the entire public water system, including source locations and activities that may affect the system such as contamination threats, transportation corridors, etc.; data on sources; assessments of types of emergencies; component vulnerability assessment forms; notification roster; and hazardous material spill vulnerability checklist.

The DOH has also developed statewide policy procedures and guidance for dealing with ongoing water supply emergencies. These include procedures for dealing with community water system emergencies, reporting water borne disease outbreaks and guidance on boil water notices and blending of sources.

### 6.3. Emergency Equipment Stockpiles

The New York State Division of Military and Naval Affairs, Office of Disaster Preparedness (ODP), coordinates the New York State Emergency Equipment Stockpiles. This equipment is available on an emergency loan basis to local political subdivisions and other state agencies primarily to assist in responding to potable water supply emergencies. The stockpiles consist of high capacity pumps, water filters, chlorination equipment, generators, light weight-quick coupling aluminum pipe, water couplings, and adapters necessary to provide delivery of an emergency source of drinking water.

In addition to the stockpile maintained by New York State at Waterford (near Albany) and Pittsford (near Rochester), each District Office of Disaster Preparedness coordinates a district stockpile which is maintained by various counties in each District. The District stockpile equipment is federal property and is considered a Civil Defense resource. District stockpiles of emergency equipment are not intended to be under direct state control in times other than an emergency. However, this equipment is a district resource available on a cooperative basis to any jurisdiction which is in need of it. District stockpile equipment loans are coordinated through the ODP District Offices.

#### **6.4. Wellhead Protection Program Submittal**

Section 1428(a)(5) of the SDWA requires that the State WHP Program include contingency plans "for the location and provision of alternate drinking water supplies for each public water system in the event of well or wellfield coordination."

The requirements of NYSDOH's emergency planning program not only meet the state's requirements of Section 1428(a)(5) of the SDWA, but actually go beyond them since the state's program deals with all forms of water supply emergencies.

For the purposes of meeting the federal Wellhead Protection Program, New York State will define those community water systems with an annual gross operating revenue of greater than \$125,000 as "major" public water systems. The federal guidance calls for all major public water systems to have a completed contingency plan at the time of the state's Wellhead Protection Program submittal. The recent promulgation of the revisions to the State Sanitary Code required plan submittals to the NYSDOH by December 31, 1990. It is not feasible to revise this schedule, nor does New York State consider it reasonable or necessary.

Implementation of the emergency plan requirements at other groundwater source community and non-community public water systems should be accomplished as resources permit. Remaining community water systems should be dealt with first on the basis of population served - the greater the population served, the higher the priority. Non-community systems should then be addressed.

## **CHAPTER 7**

### **NEW WELLS**

#### **7.1. Institutional Processes**

The protection of new public water supply wells will be accomplished through a variety of methods from state-level contamination source controls, to county, town and village or city land use controls. The institutional mechanism that will guide the protection and management of new wells is the set of procedures for the Public Water Supply Permit Program, operated by the New York State Department of Environmental Conservation.

This program, authorized by the Environmental Conservation Law Article 15, Title 15 and regulated under 6 NYCRR Parts 601 and 602, is more thoroughly described in DEC's Division of Water Technical Operation Guidance Series (TOGS) 3.2.1., "Public Water Supply Permit Program Application Processing." This document contains complete descriptions of responsibilities, technical review, procedures for objections and hearings, and permit conditions along with other information.

The permit conditions currently include elements that are consistent with Wellhead Protection Program objectives. The permit conditions will be revised to strengthen wellhead protection principles at the time that a new well permit is approved.

Currently, these permit conditions include, but are not limited to, the following:

- ◀ **Direct Control of the Wellhead**

Construction and installation standards (NYS Health Department Bulletin 42, "Recommended Standards for Water Works"; administered by NYSDOH).

- ◀ **Strict Protection Zone**

A strict protection zone of a minimum 200-foot radius. (variances possible in special

circumstances, if approved by DEC) shall be protected and controlled by direct ownership of the land, by the acquisition of protection easements or by other appropriate measures (to be approved by DEC).

This area shall further be protected from pollution by surface waters by the construction of suitable diversion ditches or embankments, and the development of the wells shall be carried out that there shall be no opportunity for pollution to enter the wells.

- ◀ **Water Quality Monitoring Requirement**

Prior to permit approval.

- ◀ **Watershed Protection Requirement**

The permittee is required to adopt Watershed Rules and Regulations, pursuant to Section 1100 of the NYS Public Health Law, for all surface water sources. However, this requirement may be waived by the DEC Water Supply Permit Program for groundwater sources if the degree of protection provided by a specifically defined zone (fixed radius or calculated) and other existing control measures is considered adequate by DEC.

The permit procedure and the permit conditions designated by DEC provide the best and simplest means for including new wells in the Wellhead Protection Program. The watershed protection permit conditions, including potential enhancements of the above conditions, afford the best opportunity for refinement of wellhead protection for new wells. Permit conditions, for example, enable DEC's Public Water Supply Permit Program to require new surface water supply permittees to adopt Watershed Rules and Regulations even though they are otherwise voluntary under New York State Department of

Health programs. This and other aspects are discussed in the next section.

## 2.2. Wellhead Protection for New Wells

The current procedures for permit conditions allow applicants for new wells the option of not adopting Watershed Rules and Regulations if the protection zone (fixed radius or calculated) and other measures are considered adequate by the DEC Water Supply Permit Program.

The New York State Wellhead Protection Program proposes that the new well permit conditions be amended to require the permittee to develop and adopt a wellhead protection plan to be approved by DEC. DEC recognizes that these plans may vary depending on local conditions and capabilities and that implementation will be an evolutionary process. This plan may take the form of local ordinances (town, village, city, county) or protection program enhancements, or the form of Watershed Rules and Regulations (DOH approval), or other options described in Chapter 5. The local program should be consistent with the proposed State Wellhead Protection Program.

In cases where privately-owned public water systems are the permittees, the supplier is still proposed to be responsible for developing the required wellhead protection plan. Adoption and implementation of such a plan will, however, typically require the endorsement and cooperation of local government authorities. In such cases, it is proposed that the Water Supply Permit Program require the permittee, in cooperation with the appropriate local authorities, to provide a wellhead protection implementation plan. This may include Watershed Rules and Regulations or other appropriate agreements with local authorities, and is subject to DEC approval.

It is also proposed that the permit conditions be amended to require the permittee to show site-specific hydrogeologic evidence that the remedial action area (or inner zone proposed in the local plan) is adequately protective against biological contamination. For this portion of the wellhead protection area, a guideline of a 60-day minimum time-of-travel may be allowed. The 60-day

criterion has been used in New York State and many European nations to provide adequate die-off of microorganisms. Time-of-travel should be considered from the point of potential contamination discharge. Alternative methods and criteria may be accepted in delineating this zone. In certain cases, existing land uses may be considered in delineating the remedial action zone as approved by DEC. Finally, it is proposed that all applicants for new well permits file a well log with the DEC Water Supply Permit Program at the time of completion of the well.

This approach for new wells will still allow local flexibility for delineating further subdivisions with the overall WHPA, and in determining the appropriate local management controls. The overall delineation for the total wellhead protection area and other policies of the State Wellhead Program would be retained. Such flexibility is necessary due to considerable variation in hydrogeologic conditions, contamination threats, and local authorities and capabilities. However, the approach is stronger in that wellhead protection plan adoption is mandatory for new well permit approval. Many existing wells are covered or will be covered by local wellhead protection plans. The Water Supply Permit Program may reopen the permit process to include existing wells in this process. The delineations performed as part of this procedure may utilize the baseline delineations described in Chapter 3, but should preferably utilize a three-zone approach.

Finally, the program accomplishments and strategies described in the Upstate and Long Island Groundwater Management plans (Department of Environmental Conservation) are recognized as part of the Wellhead Protection Program for new wells. Specific projects, such as the Special Groundwater Protection Area project by the Long Island Regional Planning Board, target planning for additional protection of groundwater resources with potential for future use. Similarly, in Upstate New York, inclusion of aquifer areas in the Wellhead Protection Program provides a means of protecting groundwater resources that may be utilized for future public water supplies even though specific well locations may not yet be known.



The NYS Water Resources Management Strategy (NYS Water Resources Planning Council, 1989; 14 volumes) also includes elements related to new wells. The recommendations of this strategy for water supply source protection, endorsed by the Water Resources Planning Council representing both public members and eight New York State agencies, support the "multiple-layer" management concepts (state and local controls) and the Watershed Rules and Regulations and local ordinance options. Comprehensive water supply system management, which includes an analysis of future water needs and creation or revision of Watershed Rules and Regulations, is a major recommendation of the Water Resource Strategy.

The Water Supply Permit Program itself does not specifically manage the sources of contamination. The permit program is used to require adoption of local programs for wellhead protection. The management of the sources is accomplished first and most importantly by the comprehensive state-level management programs described elsewhere in this submittal. Local government protection programs may take various forms, including county-level sanitary codes, town ordinances, water supplier watershed rules and regulations, and zoning ordinances. The implementation and enforcement of these local programs provide additional levels of source controls, and are the responsibility of corresponding local authority.

## **CHAPTER 2**

### **SUMMARY OF PUBLIC PARTICIPATION IN THE DEVELOPMENT OF THE WELLHEAD PROTECTION PROGRAM**

Section 1428(b) of the Safe Drinking Water Act requires that state wellhead protection programs be developed with the participation of the public including technical and citizens' advisory committees.

For partial compliance with the federal requirements and to gain the benefit of expertise of people outside the Department, a Wellhead Protection Advisory Committee was convened by the Director of the Division of Water October 12, 1988. The advisory committee consisted a broad spectrum of persons active and interested in groundwater protection efforts. Included were representatives of water purveyors, county government, regional planning boards and commissions, legislative staff, state agencies and private citizens. The roster is presented in the **ACKNOWLEDGEMENTS** at the front of this report.

The committee met formally three times to discuss the issues to be addressed in the wellhead program. The members also reviewed draft materials as the document took shape.

Issues which the Advisory Committee raised included the following:

1. The level of knowledge about groundwater varies enormously among local officials across the state. Some have a sophisticated understanding of groundwater and the tools available to protect public supplies; some need a basic knowledge of groundwater hydrology. The wellhead program must reach both extremes of the audience.
2. DEC should have its data bases on facilities & regulates organized and available for use by others to facilitate the understanding of sources of potential groundwater contamination.
3. Authorization for the Wellhead Protection Program in New York State will not require new legislation or regulations. Guidance, education, and promotion should be the primary means of establishing local programs.
4. To effectively deliver the wellhead protection message, there must be an aggressive outreach program which goes beyond printing brochures and reports.
5. Delineation procedures must be considered in the context of what is to be accomplished on the management programs. They are not purely technical exercises.
6. For implementing local protection programs, flexibility should be provided in having choices available to municipal officials and water purveyors. Watershed Rules and Regulations may be appropriate in many instances, but alternative protection schemes such as groundwater protection ordinances, zoning and site plan review procedures should be recognized as legitimate elements of a wellhead protection program.
7. While baseline delineations are needed, the program must recognize that where technical justification is available, deviations from the baseline criteria must be allowed. For instance, deep wells in confined aquifers that tap a horizontal groundwater flow regime may gain no increased protection from a 200-ft. radius Zone I than one of lesser area.
8. In densely developed areas and in many areas where critical aquifer segments cross municipal boundaries, a county-wide approach to groundwater protection may be appropriate.

9. Outreach and education programs should also focus on groups outside of government and the water supply industry. Bankers, insurance agents and other business persons should be aware of wellhead protection issues.
10. To assist the development of a consistent approach to creation of data bases and geographic information systems, the state should provide guidance and specification.
11. The outreach effort should include input from other capable agencies such as Cooperative Extension, Soil and Water Conservation Districts, the Department of State, the Water Resources Institute, and others.
12. In selecting source control programs for adjustment for wellhead protection concerns, the occurrence of problems should be reviewed so that the most significant sources are addressed first.

The more widespread public review of the submittal will be accomplished as follows:

1. The document will be distributed DEC and DOH regional offices, regional planning and development boards, county health departments, county planning departments, key local government associations, the Wellhead Protection Advisory Committee and to those persons that have expressed interest in the program.
2. The availability of the document for review at the planning offices and DEC sub-offices will be announced via the Environmental Notice Bulletin.
3. A public hearing will also be announced in the Environmental Notice Bulletin.

When the comments are received and the public hearing concluded, revisions to the program will be considered.

**SUFFOLK COUNTY SANITARY CODE**

**ARTICLE 7  
WATER POLLUTION CONTROL**

**AMENDED APRIL 9, 1986**

**ARTICLE 7  
WATER POLLUTION CONTROL**

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**SUFFOLK COUNTY SANITARY CODE  
ARTICLE 7 - WATER POLLUTION CONTROL**

**Section 701. Declaration of Policy**

The designated best use of all groundwaters of Suffolk County is for public and private water supply, and of most surface waters for food production, bathing and recreation. The federal government has officially designated the aquifer below Suffolk County as a sole-source for water supply. Therefore, it is hereby declared to be the policy of the County of Suffolk to maintain its water resources as near to their natural condition of purity as reasonably possible for the safeguarding of the public health and, to that end, to require the use of all available practical methods of preventing and controlling water pollution from sewage, industrial and other wastes, toxic or hazardous materials, and stormwater runoff.

**Section 702. Statement of Purpose**

It is the intent and purpose of this article to safeguard all the water resources of the County of Suffolk, especially in deep recharge areas and water supply sensitive areas, from discharges of sewage, industrial and other wastes, toxic or hazardous materials and stormwater runoff by preventing and controlling such sources in existence when this article is enacted and also by preventing further pollution from new sources under a program which is consistent with the above-stated Declaration of Policy.

**Section 703. Definitions**

Whenever used in this article, unless otherwise expressly stated, or unless the context or subject matter requires a different meaning, the following terms shall have the respective meanings set forth or indicated.

- A. **Board** means the Suffolk County Board of Health.
- B. **Commissioner** means the Commissioner of the Suffolk County Department of Health Services.
- C. **Communal Sewage System** means a series of sanitary intercepting sewers or intercepting collecting sewers, pumping stations, sewage treatment plants, and associated pollution control facilities for the conveyance, treatment, and disposal of sewage operated by a person other than a municipality.
- D. **Deep Recharge Area** means a geographic area of Suffolk County that contributes recharge water to a deep groundwater flow system, thus replenishing the quantity and affecting the quality of the long-term water supply. These areas are identified as Groundwater Management Zones I, II, III and V.

**E. Department** means the Suffolk County Department of Health Services.

**F. Discharge** means to release by any means or to relinquish control in a manner that could result in a release to the surface waters, groundwaters, surface of the ground, or below ground.

**G. Disposal System** means any plumbing or conveyances which result in or are capable of resulting in a discharge of sewage, industrial wastes, toxic or hazardous materials, stormwater runoff, cooling water or other wastes. This includes but is not limited to septic tanks, leaching pools, sumps, tile fields, holding tanks, outfalls and connecting piping.

**H. Groundwater Management Zone** means any of the areas delineated in Suffolk County by the "Long Island Comprehensive Waste Treatment Management Plan (L.I. 208 Study)," as revised by the "Long Island Groundwater Management Plan," and subsequent revisions adopted by the Board identifying differences in regional hydrogeologic and groundwater quality conditions. The boundaries of the Groundwater Management Zones are set forth on a map adopted by the Board filed in the Office of the Commissioner in Hauppauge, New York.

**I. Housebarge** means the same as Houseboat except that a housebarge has no self-contained mechanical method of propulsion.

**J. Houseboat** means a floating structure used as a dwelling with a self-contained mechanical method of propulsion, not primarily designed to be a means of locomotion over water. The design criteria shall be generally accepted standards of naval architecture.

**K. Industrial Waste** means any liquid, gaseous, or solid waste substance or a combination thereof resulting from any operation or process of industry, manufacturing, trade or business or from the development or recovery of any natural resources, which may cause or might reasonably be expected to cause pollution of the water resources of the County of Suffolk in contravention of the requirements of this article.

**L. Municipal Sewage System** means the series of sanitary intercepting sewers or intercepting collecting sewers, pumping stations, sewage treatment plants, or pollution control facilities, drains and other facilities, connections and equipment or any combination of the aforementioned, for the conveyance, treatment and disposal of sewage operated by the County of Suffolk or a municipality within the County of Suffolk.

**M. Offensive Material** means any sewage or non-sewage fecal matter, urine, garbage, waste, or any putrescible organic matter, scavenger waste, the contents of private or individual sewage disposal systems, either liquid or solid, or other substances or liquid which may adversely affect health.



N. Other Wastes means refuse, spillage and the leaching from these materials, oil, tar, acids, chemicals, and all other discarded matter which may reasonably be expected to cause pollution of the waters of the County of Suffolk.

O. Private or Individual Sewage Disposal System means a water-flush facility for the disposal of sewage which does not connect either with a municipal or communal sewage system. This includes, but is not limited to, septic tanks, leaching pools and tile fields.

P. Restricted Toxic or Hazardous Materials shall mean the following toxic or hazardous chemicals that have been or could be expected to be detected in the groundwater, or in discharges to the groundwater, of Suffolk County. This definition applies to these substances alone or in combination, solution or mixture with other substances, or chemically compounded with other elements or compounds.

Arsenic	Freon 113
Barium	Lead
Benzene	Mercury
Bromobenzene	Methylene Chloride
Bromodichloromethane	Nickel
Bromoform	Pesticides
Cadmium	Petroleum Distillates
Carbon Tetrachloride	Phenols
Chlorobenzene	Phthalates
Chlorodibromomethane	Roadway Deicing Salt
Chloroform	Silver
Chlorotoluene	Styrene
Chromium	Tetrachloroethylene
Cis 1,2 Dichloroethylene	1,2,4,5 Tetramethylbenzene
Creosotes	Toluene
Cyanide	1,2,3 Trichlorobenzene
Dichlorobenzene	1,2,4 Trichlorobenzene
1,1 Dichloroethane	1,1,1 Trichloroethane
1,2 Dichloroethane	1,1,2 Trichloroethane
1,1 Dichloroethylene	1,1,2 Trichloroethylene
1,2 Dichloropropane	1,2,3 Trichloropropane
p-Diethylbenzene	1,2,4 Trimethylbenzene
Ethylbenzene	1,3,5 Trimethylbenzene
p-Ethyltoluene	Vinyl Chloride
Fluoride	Xylenes

All other halogenated hydrocarbon compounds.

Q. Sewage means the water-carried human or animal wastes from residences, buildings, industrial establishments or other places, together with such groundwater infiltration and surface water as may be present. A mixture of sewage as herein defined and industrial wastes or other wastes as defined above may be considered industrial wastes or commingling within the meaning of this article.

**R. Stormwater Runoff** means the portion of total precipitation that travels over natural and developed land surfaces (e.g., woodlands, lawns, farms, gardens, roofs, driveways, parking lots, roads, etc.) transporting contaminants that may be present.

**S. Temporary Disposal System** means a system for the disposal of sewage where such system is intended for use for a specified period of time prior to completion of the construction of an approved sewage treatment and disposal system.

**T. Toxic or Hazardous Materials** shall mean the same as defined in Article 12 of this Code.

**U. Toxic or Hazardous Wastes** shall mean the same as defined in Article 12 of this Code.

**V. Treatment System** means a system designed to reduce or alter the contaminant content of sewage or industrial waste for the purpose of permitting the discharge of some portion of said waste.

**W. Water Supply Sensitive Areas** means:

1. A groundwater area separated from a larger regional groundwater system where salty groundwater may occur within the Upper Glacial aquifer, and where deepening of private wells and/or the development of community water supplies may be limited; or

2. Areas in close proximity to existing or identified future public water supply wellfields. In general, for the purposes of this article, "close proximity" shall mean within 1,500 feet upgradient or 500 feet downgradient of public supply wells screened in the Upper Glacial aquifer.

3. A limited water budget area, not underlined by fresh Magothy, defined by published reports acceptable to the commissioner.

4. The areas described in items W.1., 2., 3., above are set forth on a map adopted by the Board filed in the Office of the Commissioner in Hauppauge, New York.

#### **Section 704. Powers of the Commissioner**

The commissioner may:

A. make, or cause to be made, any investigation which, in his opinion, is needed for the enforcement of this article or for controlling or reducing the potential for contamination of the waters of the county from sewage, industrial or other wastes, toxic or hazardous materials and/or stormwater runoff;

B. approve, with conditions, non-residential structures, processes, facilities and activities in deep recharge areas and water supply sensitive areas to assure compliance with Section 706. Such conditions shall be embodied in covenants running with the land as specified in the Department's standards;

C. promulgate and establish standards and schedules to effect the purpose of this article;

D. order the posting of a performance bond or other undertaking either prior to or subsequent to the construction or operation of an industrial facility within Suffolk County on a case-by-case basis if evidence indicates such may be necessary to protect water resources from the adverse effects of operating such a facility.

E. Notwithstanding any other provision of this article, if the commissioner finds a condition which has the potential for contaminating the waters of the county with toxic or hazardous materials, or which otherwise constitutes an immediate danger to public health, and determines that it could appear prejudicial to the public interest to delay action, the commissioner may serve an order upon the permit holder, or if there is no permit upon the person in charge of the facility or site, citing such conditions and specifying the corrective action to be taken and a time period of less than fifteen (15) days within which such action shall be taken.

Such order may state that a permit is immediately suspended and/or that all operations are to be discontinued forthwith.

Any order requiring certain action or the cessation of certain activities immediately or within a specified period of less than fifteen (15) days shall provide such person an opportunity to be heard, which hearing shall be scheduled for a time no more than fifteen (15) days after the date the order is served."

## **Section 705. General Restrictions and Prohibitions**

### **A. Construction of a Disposal System**

1. It shall be unlawful for any person to construct, reconstruct, install or substantially modify any disposal system without first having obtained a permit therefor issued by or acceptable to the commissioner.

2. Section 705.A.1 does not apply to stormwater disposal systems unless there is an actual or potential discharge into the system of industrial wastes, toxic or hazardous materials, or sewage.

## **B. Discharge**

1. It shall be unlawful for any person to discharge sewage, industrial wastes, offensive materials, toxic or hazardous materials or other wastes to any surface waters or groundwaters, to the surface of the ground or to a disposal system unless such discharge is specifically in accordance with a State Pollutant Discharge Elimination System (SPDES) Permit or other permit issued by or acceptable to the commissioner for that purpose.

2. No permits, as stipulated in Section 705.B.1, are required for the following types of discharges:

a. discharge of sewage from an existing residential structure to a private or individual sewage disposal system, or from any residential structure, houseboat or housebarge to a communal sewage system or municipal sewage system that does not contravene standards or result in a public health nuisance;

b. discharge of sewage from a commercial or industrial facility to a communal sewage system or municipal sewage system;

c. discharge of stormwater to a disposal system unless there is an actual or potential discharge into the system of industrial wastes or toxic or hazardous materials or sewage.

3. For existing discharges not prohibited by law prior to the effective date of this article, a permit shall be obtained within the time limits provided in Section 707.

## **C. Construction or Operation of a Treatment System**

1. It shall be unlawful for any person to construct, modify or operate a treatment system without first obtaining a permit therefor issued by or acceptable to the commissioner.

## **D. Commingling**

1. It shall be unlawful for any person to commingle stormwater runoff, cooling water, sewage or industrial wastes in any disposal system not approved for that purpose pursuant to this article.

## **E. Stormwater Discharges**

1. It shall be unlawful for any person to develop or use land in such a manner as to cause stormwater runoff from that land to become contaminated and discharged in contravention of the other provisions of this article.

**Section 706. Deep Recharge Areas and  
Water Supply Sensitive Areas**

The following additional restrictions and prohibitions shall apply in deep recharge areas and water supply sensitive areas.

A. It shall be unlawful for any person to discharge any restricted toxic or hazardous materials or to discharge industrial wastes from processes containing restricted toxic or hazardous materials to the groundwaters, to the surface of the ground, beneath the surface of the ground, to a municipal or communal sewage system, or to a disposal system except as follows:

1. application of fertilizers, pesticides or other agricultural chemicals approved for that purpose by the appropriate state and federal agencies; or

2. application of road surfacing or road construction materials or deicing salts to roadways, walkways, and parking areas; or

3. discharge from an establishment to a municipal or communal sewage system with effluent disposal to marine surface waters or recharge outside of the deep recharge areas and water supply sensitive areas, and the following minimum requirements are satisfied pursuant to a permit issued by or acceptable to the commissioner:

a. Dual plumbing systems shall be installed, one for the sanitary wastes and one for industrial wastes.

b. Sampling access approved by the administrative head of the municipal or communal sewage system and the Department shall be provided for both the sanitary and industrial waste systems.

c. The administrative head of the municipal or communal sewage system, with approval of the Department, shall determine which industrial wastes are acceptable to "hold and haul" and which require pretreatment prior to discharge to the collection system in order to assure compliance with the applicable sewer use ordinance.

d. Personnel authorized by the administrative head of the municipal or communal sewage system or other individual(s) acceptable to the commissioner, shall operate at each establishment its pretreatment facility for industrial wastes prior to discharge to the collection system.

e. Only batch pretreatment of industrial wastes will be permitted. Batch facilities and facilities for storage of drums containing toxic or hazardous wastes shall be located in an area accessible at all times by district personnel, in or adjacent to the industrial building, with heat and power provided by the owner.

f. Personnel authorized by the administrative head of the municipal or communal sewage system or other individual(s) acceptable to the commissioner, will be responsible for collection and disposal of pretreatment sludges, and other "hold and haul" materials.

g. The owner shall allow the personnel authorized by the administrative head of the municipal or communal sewage system or other individual(s) acceptable to the commissioner, access, from time to time, to wet process areas to perform their duties and inspections.

h. Industrial process-area floors shall be provided with adequate means to contain any spill of restricted toxic or hazardous materials. The design of containment facilities shall be subject to the approval of the commissioner.

i. A minimum of four (4) groundwater monitoring wells shall be installed at the owner's expense.

j. Financial assurance shall be provided to pay for cleanup of spills. This cost shall be entered as a judgment upon notice against the owner, occupant, tenant, or lessee responsible for such spill or spills.

B. It shall be unlawful to use or store any restricted toxic or hazardous materials on any premises except as follows:

1. a. the intended use of the product stored is solely for on-site heating, or intermittent stationary power production such as stand-by electricity generation or irrigation pump power; and

b. the facility for such storage is intended solely for the storage of kerosene, number 2 fuel oil, number 4 fuel oil, number 6 fuel oil, diesel oil or lubricating oil; and

c. the facility for such storage is constructed in accordance with the construction standards of Article 12 of the Suffolk County Sanitary Code for non-petroleum hazardous materials; and

d. the materials so stored are not industrial wastes from processes containing restricted toxic or hazardous materials; and

e. the materials stored are not intended for resale; or

2. a. the materials so stored are in containers where the total liquid capacity stored at any time does not exceed 250 gallons and where the dry storage in bags, bulk or small containers does not exceed 2,000 pounds; or

3. a. the materials so stored are intended solely for for treatment or disinfection of water or sewage in treatment processes located at the site; or

4. a. the materials are stored solely incident to retail sales on premises and are not processed, pumped, packaged, or repackaged at the site; or

5. a. the materials are stored at a service station or similar installation solely incident to the distribution of gasoline, kerosene, diesel oil or other petroleum products for motor vehicular uses and repair; and

b. the facility for such storage is constructed in accordance with construction and monitoring standards of Article 12 of the Suffolk County Sanitary Code for non-petroleum hazardous materials; or

6. a. the materials are stored at an establishment for which a permit has been secured in accordance with Section 706.A.3, and a permit for such storage has been granted by the Department.

7. a. the materials are stored on a farm site solely incident to on-premises use, and consist of fertilizers, pesticides, or other agricultural chemicals to be applied in accordance with the provisions of Section 706.A.1.

C. The provisions of Sections 706.A and 706.B of this article shall be applicable:

1. immediately for all non-residential facilities which have not been approved, constructed, or put into operation prior to the effective date of this article; and

2. immediately for all non-residential facilities which were approved, constructed, or put into operation prior to the effective date of this article upon:

a. any change in use or process which results in an increase of mass loading in the discharge of restricted toxic or hazardous materials, or introduces a toxic or hazardous material not previously discharged; or

b. any change in use or process which results in an increase of the storage or change of type of restricted toxic or hazardous materials.

D. When upgraded in accordance with the time schedule specified in Article 12, existing facilities, including those for petroleum products, not otherwise covered by items 706.A, 706.B or 706.C, above, shall conform to the standards of Article 12 for non-petroleum hazardous materials. These requirements do not apply to facilities upgraded in accordance with Article 12 prior to the effective date of this article.

## **Section 707. Permits**

A. All permits required by this article shall be applied for in accordance with the provisions of Article 3 of the Suffolk County Sanitary Code.

B. All persons required to obtain a permit by reason of any law, rule or regulation in effect prior to the effective date of this article shall be governed by such law, rule or regulation in determining when said permit shall be obtained.

C. All persons newly required to obtain a permit by this article due to any act or condition in existence as of the date this article becomes effective, shall apply for said permit within one (1) year of that date.

D. All persons required to obtain a permit by this article due to any act or condition not in existence on the effective date of this article must apply for and receive said permit prior to undertaking such act or creating such condition.

## **Section 708. Emergency Embargo; Seizure**

A. In accordance with the general provisions of Article 2 of the Suffolk County Sanitary Code, the commissioner or his authorized agent is authorized to seize and embargo materials consisting of industrial wastes, toxic or hazardous materials, or any combination thereof when in the judgment of the commissioner, the nature and condition of said material constitutes an actual or potential hazard to the source of drinking water supply.

B. The following additional requirements shall also apply:

1. When materials are embargoed or seized pursuant to subsection A. above, they shall not be moved, used or removed except by or under the direction of an agent authorized by the commissioner.

2. It shall be unlawful for a person not authorized by the commissioner to remove or alter an embargo order or tag.

3. After having embargoed, condemned or otherwise seized materials pursuant to this section, the commissioner shall afford the owner of the seized material an opportunity to be heard at a hearing held within ninety-six (96) hours after the seizure. The commissioner may then vacate the order or sustain it and order a proper and safe disposition of the materials seized.

4. Unless ordered otherwise, removal shall be at the expense of the owner.



## **Section 709. Monitoring and Reporting**

A. All persons maintaining subsurface leaching facilities and holding tanks for the purposes defined in Section 703.G shall make them accessible to representatives of the Department for sampling and monitoring purposes. The type of access shall be in conformance with the requirements of the commissioner.

B. All persons maintaining a discharge of industrial wastes, toxic or hazardous materials, and/or offensive materials pursuant to a permit issued by the commissioner must, at their own expense, monitor the discharge for such constituents at such intervals as specified in their permit.

1. The samples shall be collected in a manner prescribed by the Department, and analytical results shall be reported to the Department as specified in the permit.

2. The permittee may employ private laboratory facilities of its own choosing. However, the laboratory shall be approved by New York State Departments of Health or Environmental Conservation or other agency acceptable to the commissioner for the type of analyses performed.

3. Sampling shall be by an employee of the laboratory which prepares the analysis, and the laboratory shall be responsible for the accuracy and quality of the sample.

C. Owners, tenants and occupants of industrial facilities may be required to install monitoring systems, such as monitoring wells, both upgradient and downgradient in the groundwater flow. The number and location of the monitoring wells and their installation shall be in conformance with the requirements of the Department. The owner, tenant and occupant shall be responsible for all costs, as well as costs for groundwater monitoring and evaluation as required by the Department.

D. The owners of all real property used for non-residential purposes shall, within thirty (30) days of change, report in writing to the Department:

1. New Facility

- a. Name of tenant or occupant; address, including tax map number.

- b. Description of process, operation, or use.

2. Existing Facility

- a. Name of new tenant or occupant; address, including tax map number; description of process, operation, or use.

- b. Description of change of process, operation, or use.

This notification requirement shall not apply to changes in tenancy or occupancy of the space where a permit is not, or would not be, required for the use.

#### **Section 710. Requirement to Connect to Public Sanitary Sewer**

A. Sewage and industrial wastes from any building or premises shall be discharged directly into a municipal sewage system, if available and accessible. Discharge of industrial wastes to a municipal sewage system shall be in accordance with the applicable sewer use ordinance.

B. If there is no municipal sewage system or facility connecting therewith available and accessible, sewage from any new building or premises shall be discharged directly into a communal sewage system or a facility connecting with a communal sewage system, if available and accessible.

C. If there is no municipal or communal sewage system or facility connecting therewith available and accessible, a private sewage disposal system approved by the Department may be used.

D. In the event that a municipal or communal sewage system or facility connecting therewith becomes available and accessible, any building or premises shall be connected to such municipal or communal sewage system, and immediately thereafter the use of any other sewage disposal system or facility shall be discontinued.

#### **Section 711. Abandonment of Disposal Systems**

Existing disposal systems abandoned as a result of connection to municipal sewage systems or communal sewage systems or different disposal systems or for other reasons shall be removed or permanently sealed in a manner acceptable to the commissioner.

#### **Section 712. Engineering Plans**

A. All plans, specifications, and reports required by this article shall be prepared by a New York State licensed Professional Engineer unless otherwise prescribed in the New York State Education Law.

B. No permit to construct, reconstruct, modify, use or operate shall be issued without the prior submission of plans and/or reports acceptable to the commissioner.

#### **Section 713. Operation of Sewage or Industrial Waste Treatment Facilities**

A. All sewage and industrial waste treatment facilities shall be operated by a person or persons with qualifications acceptable to the commissioner.

B. An operator of a sewage or industrial waste treatment system shall be physically present at the sewage or industrial waste treatment plant he is responsible for operating for a period of time each day satisfactory to the commissioner.

C. This section does not apply to underground septic tank and leaching pool systems used for the disposal of domestic sewage.

#### **Section 714. Enforcement**

The provisions of this article shall be enforced in accordance with the enforcement provisions of Article 2 of the Suffolk County Sanitary Code.

#### **Section 715. Appeals and Variances**

In any case where an applicant for a permit or approval is dissatisfied with a determination of the authorized agent to act for the commissioner, or seeks a variance from the strict application of the letter of the requirements of this article, or standards promulgated pursuant to this article, he may appeal from the determination of the deputy or for consideration of his application to the Board of Review in accordance with the provisions of Article 2 of the Suffolk County Sanitary Code.

#### **Section 716. Separability of Provisions**

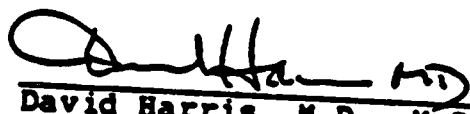
In the event that any provision of this article is declared unconstitutional or invalid, or the application thereof to any person or circumstance is held invalid, the applicability of such provision to other persons and circumstances and the constitutionality or validity of every other provision of this article shall not be affected thereby.

CERTIFICATION


STATE OF NEW YORK )  
COUNTY OF SUFFOLK )

I, David Harris, M.D., M.P.H., Commissioner of the Suffolk County Department of Health Services, and Chairman of the Suffolk County Board of Health, do hereby certify that the foregoing Article 7 "Water Pollution Control" of the Suffolk County Sanitary Code, as amended, has been adopted by the Board of Health at its regular meeting held in Hauppauge, New York, on April 9, 1986, and that the same is a true and complete copy of said article published by authority and order and under the direction of the said Suffolk County Department of Health Services.

IN WITNESS WHEREOF, I have  
hereunto set my hand on this  
24 day of April, 1986.

  
David Harris, M.D., M.P.H.  
Commissioner, Suffolk County  
Department of Health Services

Subscribed and sworn to before me  
this 24 day of April 1986.

  
PATRICIA DE LA ROSA  
NOTARY PUBLIC, State of New York  
Suffolk County, No. 4748964  
Commission Expires March 30, 1987

C

- 11.) MAIN ST. & NYS 25  
12.) NYS 25 & LIRR  
13.) LIRR & NYS 25  
14.) NYS 25 & CASSIDY LA.

15.) NYS 25 & LIRR  
16.) LIRR & NYS 25  
17.) NYS 25 & CASSIDY LA.

18.) NYS 25 & LIRR  
19.) LIRR & NYS 25  
20.) NYS 25 & CASSIDY LA.

LITTLE  
PECONIC  
BAY

GARDINERS BAY

BLOCK ISLAND SOUND

SHELTER ISLAND

ATLANTIC OCEAN

ZONE V

### LEGEND

#### GROUNDWATER MANAGEMENT ZONES

DEEP RECHARGE AREAS ARE ZONES I, II, III, & V (SECT. 703 D. & 706) -  
INCLUDES ALL PROPERTIES THAT FRONT ON THE BOUNDARY

WATER SUPPLY SENSITIVE AREAS  
(SECT. 703 W. & 706)

AREAS SEPARATED FROM A LARGER REGIONAL GROUNDWATER SYSTEM  
(INCLUDES: FIRE ISLAND, SHELTER ISLAND, FISHERS ISLAND, GILGO / OAK BEACH)

WATER BUDGET AREA OF THE NORTH FORK

WELLFIELD OUTSIDE OF DEEP RECHARGE AREA OR OTHER  
WATER SUPPLY SENSITIVE AREA



III

- 22.) EASTPORT RD. & SUNRISE HWY.
- 23.) SUNRISE HWY. & MIDDLE ISLAND RD.
- 24.) MIDDLE ISLAND RD. & LIRR
- 25.) LIRR & CR 101
- 26.) CR 101 & SOUTHAVEN AVE.
- 27.) SOUTHAVEN AVE. & MEDFORD AVE.
- 28.) MEDFORD AVE. & CEDAR AVE.
- 29.) CEDAR AVE. & N. OCEAN AVE.
- 30.) N. OCEAN AVE. & FISK RD.
- 31.) FISK RD. & JAMAICA AVE.
- 32.) JAMAICA AVE. & BLUE POINT RD.
- 33.) BLUE POINT RD. & LIE

- 34.) LIE & NICOLLS RD.
- 35.) NICOLLS RD. & SUNRISE HWY.
- 36.) SUNRISE HWY. & CONNETQUOT AVE.
- 37.) CONNETQUOT AVE. & LOWELL AVE.
- 38.) LOWELL AVE. & LIRR
- 39.) LIRR & SAGTIKOS PKWY.
- 40.) SAGTIKOS PKWY. & SONIA RD.
- 41.) SONIA RD. & S. 4th ST.
- 42.) S. 4th ST. & UDALL RD.
- 43.) UDALL RD. & GRAND BLVD.
- 44.) GRAND BLVD. & LIRR
- 45.) LIRR & NASSAU-SUFFOLK CTY. LINE

B

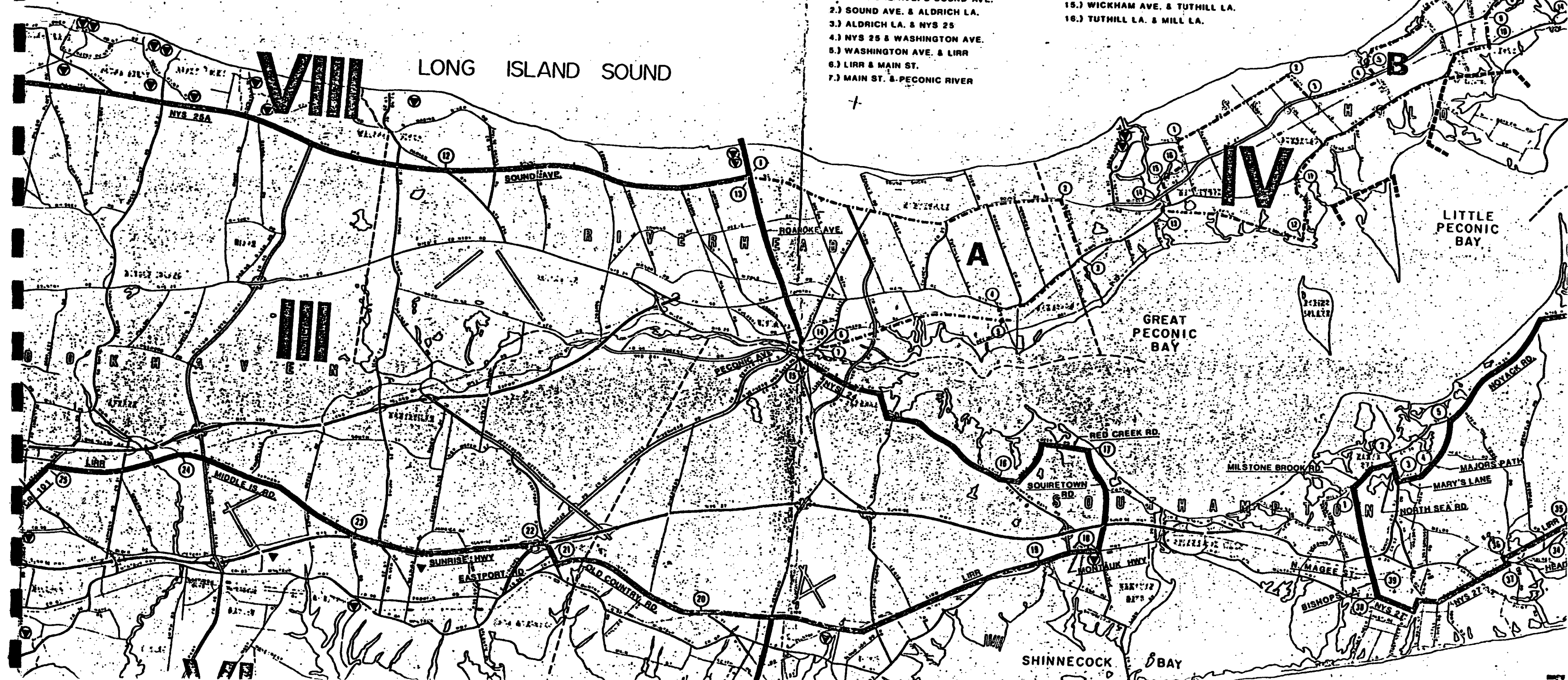
- 1.) MILL LA. & OREGON RD.
- 2.) OREGON RD. & BRIDGE LA.
- 3.) BRIDGE LA. & CR 27
- 4.) CR 27 & PECONIC LA.
- 5.) PECONIC LA. & SOUND VIEW AVE.
- 6.) SOUND VIEW AVE. & LIGHTHOUSE RD.
- 7.) LIGHTHOUSE RD. & NORTH RD.
- 8.) NORTH RD. & CR 27
- 9.) CR 27 & BOISSEAU AVE.
- 10.) BOISSEAU AVE. & RTE. 25
- 11.) RTE. 25 & NEW SUFFOLK RD.
- 12.) NEW SUFFOLK RD. & SUFFOLK AVE.
- 13.) SUFFOLK AVE. & NYS 25
- 14.) NYS 25 & WICKHAM AVE.
- 15.) WICKHAM AVE. & TUTHILL LA.
- 16.) TUTHILL LA. & MILL LA.

C

- 1.) CASSIDY LA. & CR 27
- 2.) CR 27 & McCANN LA.
- 3.) McCANN LA. & SOUND DR.
- 4.) SOUND DR. & SOUTHERN BLVD.
- 5.) SOUTHERN BLVD. & CEDAR DR.
- 6.) CEDAR DR. & STARS RD.
- 7.) STARS RD. & NYS 25
- 8.) NYS 25 & MANHASSET AVE.
- 9.) MANHASSET AVE. & CHAMPLIN PL.
- 10.) CHAMPLIN PL. & MAIN ST.
- 11.) MAIN ST. &
- 12.) NYS 25 & L
- 13.) LIRR & NYS
- 14.) NYS 25 & C

A

- 1.) ROANOKE AVE. & SOUND AVE.
- 2.) SOUND AVE. & ALDRICH LA.
- 3.) ALDRICH LA. & NYS 25
- 4.) NYS 25 & WASHINGTON AVE.
- 5.) WASHINGTON AVE. & LIRR
- 6.) LIRR & MAIN ST.
- 7.) MAIN ST. & PECONIC RIVER





# ZONES I & III

- 1.) NASSAU-SUFFOLK CTY. LINE & N. HEMPSTEAD TPKE
- 2.) N. HEMPSTEAD TPKE. & NYS 25A
- 3.) NYS 25A & INDIAN HEAD RD.
- 4.) INDIAN HEAD RD. & SMITHTOWN RD.
- 5.) SMITHTOWN RD. & PLYMOUTH BLVD.
- 6.) PLYMOUTH BLVD. & OLD WILLETS PATH
- 7.) OLD WILLETS PATH & VETS. MEMORIAL HWY.
- 8.) VETS. MEMORIAL HWY. & NYS 347
- 9.) NYS 347 & STONY BROOK RD.
- 10.) STONY BROOK RD. & MAIN ST.
- 11.) MAIN ST. & NYS 25A
- 12.) NYS 25A & SOUND AVE.

- 13.) SOUND AVE. & ROANOKE AVE.
- 14.) ROANOKE AVE. & PECONIC AVE.
- 15.) PECONIC AVE. & NYS 24
- 16.) NYS 24 & RED CREEK RD.
- 17.) RED CREEK RD. & SQUIRETOWN RD.
- 18.) SQUIRETOWN RD. & MONTAUK HWY.
- 19.) MONTAUK HWY. & LIRR
- 20.) LIRR & OLD COUNTRY RD.
- 21.) OLD COUNTRY RD. & EASTPORT RD.

- 22.) EASTPORT RD. & SUNRISE HWY.
- 23.) SUNRISE HWY. & MIDDLE ISLAND RD.
- 24.) MIDDLE ISLAND RD. & LIRR & CR 101
- 25.) LIRR & CR 101 & SOUTHAVEN AVE.
- 26.) CR 101 & SOUTHAVEN AVE.
- 27.) SOUTHAVEN AVE. & MEDFORD RD.
- 28.) MEDFORD RD. & CEDAR AVE.
- 29.) CEDAR AVE. & N. OCEAN AVE.
- 30.) N. OCEAN AVE. & FISK RD.
- 31.) FISK RD. & JAMAICA AVE.
- 32.) JAMAICA AVE. & BLUE POINT RD.
- 33.) BLUE POINT RD. & LIRR



**REFERENCE NO. 27**



4183

NATIONAL FLOOD INSURANCE PROGRAM

**FIRM**  
**FLOOD INSURANCE RATE MAP**

TOWN OF  
SMITHTOWN,  
NEW YORK  
SUFFOLK COUNTY

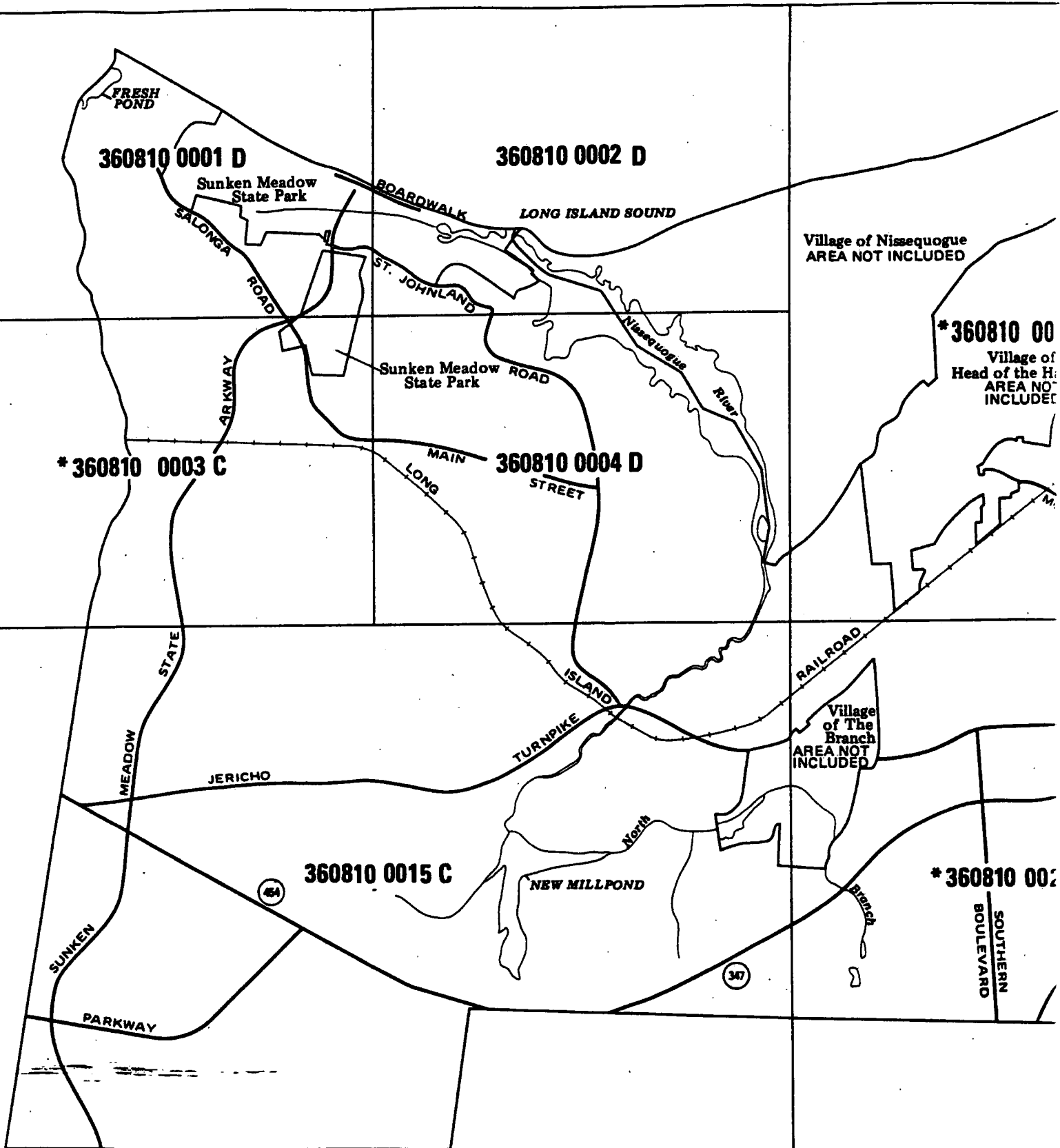
**MAP INDEX**  
PANELS PRINTED: 1, 2, 4, 15,

COMMUNITY-PANEL NUMBERS  
360810 0001-0020

MAP REVISED:  
JUNE 2, 1992



Federal Emergency Management Agency



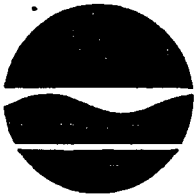
**REFERENCE NO. 28**



## PROJECT NOTE

TO: Project File: Star Sand: Gravel CorpDATE: September 1996FROM: Tonya BallaW.O. NO.: 04200-022-081-0135-05SUBJECT: Sensitive Environments

Based on the information received from the New York State Department of Environmental Conservation there are eight ~~the~~ state threatened or endangered species within 4 miles of the site. Three of the eight species also are found on the federal threatened or endangered list. The closest endangered/threatened species to the site is 2 miles.



Michael D. Zagata  
Commissioner

NEW YORK STATE  
DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Wildlife Resources Center  
700 Troy-Schenectady Road  
Latham, NY 12110-2400

(518) 783-3932

August 23, 1996



John Major  
Director

Michelle L. Hunter  
Roy F. Weston  
Sutton Park, Suite 205  
465 Columbus Avenue  
Valhalla, NY 10595-1336

Dear Ms. Hunter:

We have reviewed the New York Heritage Program files with respect to your recent request for biological information concerning the USEPA Hazardous Waste Investigation, the STAR SAND & GRAVEL SITE, as indicated on your enclosed map, located in the Town of Smithtown, Suffolk County, New York State.

Enclosed is a computer printout covering the area you requested to be reviewed by our staff. The information contained in this report is considered sensitive and may not be released to the public without permission from the New York Natural Heritage Program.

Our files are continually growing as new habitats and occurrences of rare species and communities are discovered. In most cases, site-specific or comprehensive surveys for plant and animal occurrences have not been conducted. For these reasons, we can only provide data which have been assembled from our files. We cannot provide a definitive statement on the presence or absence of species, habitats or natural communities. This information should not be substituted for on-site surveys that may be required for environmental assessment.

This response applies only to known occurrences of rare animals, plants and natural communities and/or significant wildlife habitats. You should contact our regional office, Division of Regulatory Affairs, at the address enclosed for information regarding any regulated areas or permits that may be required (e.g., regulated wetlands) under State Law.

If this proposed project is still active one year from now we recommend that you contact us again so that we can update this response.

Sincerely,

*Nancy Davis Ricci*

Nancy Davis-Ricci  
Information Services  
New York Natural Heritage Program

Encs.

cc: Reg. 1, Wildlife Mgr.  
Reg. 1, Fisheries Mgr.

## BIOLOGICAL AND CONSERVATION DATA SYSTEM - ELEMENT OCCURRENCE REPORT, 19 AUG 1996

Prepared by N.Y.S.D.E.C. Natural Heritage Program, Latham New York

(This report contains sensitive information which should be treated in a sensitive manner. Refer to the users guide for explanation of codes and ranks.)

* COUNTY & TOWN	USGS TOPO MAP/ LAT. & LONG.	PREC- ISION	LAST SEEN	EO RANK	SCIENTIFIC AND COMMON NAME	ELEMENT TYPE	NY STATUS	US STATUS	HERITAGE RANKS	OFFICE USE	OFFICE USE
* SUFFOLK											
BROOKHAVEN	SAINT JAMES 405756 730931	S	1990	B	MARINE ROCKY INTERTIDAL MARINE ROCKY INTERTIDAL	COMMUNITY	U		G5 S1S2		4007382 5
BROOKHAVEN	SAINT JAMES 405610 730845	S	1995	C	CHARADRIUS MELODUS PIPING PLOVER	BIRD	E	LT	G3 S2B	ESU	4007382 7
BROOKHAVEN	SAINT JAMES 405756 730809	S	1984	D	CHARADRIUS MELODUS PIPING PLOVER	BIRD	E	LT	G3 S2B	ESU	4007382 1
BROOKHAVEN	SAINT JAMES 405756 730809	S	1985	CD	STERNA ANTILLARUM LEAST TERN	BIRD	E	LENL	G4 S3B	ESU	4007382 1
BROOKHAVEN	SAINT JAMES 405812 730808	S	1990	BC	LIATRIS SCARIOSEA VAR NOVAE-ANGLIAE NEW ENGLAND BLAZING-STAR	VASCULAR PLANT	R	C2	G5?T3 S2		4007382 9
BROOKHAVEN	SAINT JAMES 405725 730740	S	1991	C	TRIPSACUM DACTYLOIDES NORTHERN GAMMA GRASS	VASCULAR PLANT	U		G5 S2		4007382 13
HUNTINGTON	NORTHPORT 405542 731922	S	1994	CD	CHARADRIUS MELODUS PIPING PLOVER	BIRD	E	LT	G3 S2B	ESU	4007383 6
HUNTINGTON	NORTHPORT 405542 731922	S	1993	F	STERNA ANTILLARUM LEAST TERN	BIRD	E	LENL	G4 S3B	ESU	4007383 6
HUNTINGTON	NORTHPORT 405542 731922	S	1993	F	STERNA HIRUNDO COMMON TERN	BIRD	T	C2NL	G5 S3B	ESU	4007383 8
ISLIP	CENTRAL ISLIP 404949 731143	M	1936	H	CAREX COLLINSII COLLINS SEDGE	VASCULAR PLANT	R		G4 S1S2		4007372 63
SMITHTOWN	CENTRAL ISLIP 405138 731226	S	1986	BC	FRESHWATER TIDAL MARSH FRESHWATER TIDAL MARSH	COMMUNITY	U		G3G4 S2		4007372 81

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* COUNTY & TOWN	USGS TOPO MAP/ LAT. & LONG.	PREC- ISION	LAST SEEN	EO RANK	SCIENTIFIC AND COMMON NAME	ELEMENT TYPE	NY STATUS	US STATUS	HERITAGE RANKS	OFFICE USE	OFFICE USE
SMITHTOWN	CENTRAL ISLIP 404943 731333	S	1984	E	MITOURA HESSELI HESSEL'S HAIRSTREAK	BUTTERFLY or SKIPPER	U	3C	G3G4 S1		4007372 10
SMITHTOWN	CENTRAL ISLIP 405110 731307	S	1988	E	PANDION HALIAETUS OSPREY	BIRD	T		G5 S4	ESU	4007372 31
SMITHTOWN	CENTRAL ISLIP 405132 731237	G	1938	X	BERULA ERECTA WILD PARSNIP	VASCULAR PLANT	U		G4G5 SX		4007372 3
SMITHTOWN	CENTRAL ISLIP 405047 731143	M	1924	H	CAREX COLLINSII COLLINS SEDGE	VASCULAR PLANT	R		G4 S1S2		4007372 62
SMITHTOWN	CENTRAL ISLIP 404926 731400	S	1989	E	CAREX SEORSA WEAK STELLATE SEDGE	VASCULAR PLANT	R		G4 S2		4007372 34
SMITHTOWN	CENTRAL ISLIP 405047 731051	G	1927	H	CAREX STYLOFLEXA BENT SEDGE	VASCULAR PLANT	U		G4G5 S1		4007372 37
SMITHTOWN	CENTRAL ISLIP 404943 731333	S	1991	C	CHAMAECYPARIS THYOIDES ATLANTIC WHITE CEDAR	VASCULAR PLANT	R		G4 S3		4007372 10
SMITHTOWN	CENTRAL ISLIP 405124 731149	M	1934	H	DIGITARIA FILIFORMIS SLENDER CRABGRASS	VASCULAR PLANT	R		G5 S2		4007372 66
SMITHTOWN	CENTRAL ISLIP 405133 731225	S	1987	AB	ELEOCHARIS OBTUSA VAR OVATA BLUNT SPIKERUSH	VASCULAR PLANT	R		G5T4Q S1S2		4007372 81
SMITHTOWN	CENTRAL ISLIP 405137 731238	M	1910	H	HYDROCOTYLE VERTICILLATA WATER-PENNYWORT	VASCULAR PLANT	E		G5 S1		4007372 70
SMITHTOWN	CENTRAL ISLIP 405130 731148	M	1915	H	POLYGALA INCARNATA PINK MILKWORT	VASCULAR PLANT	U		G5 SX		4007372 71

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* COUNTY & TOWN	USGS TOPO MAP/ LAT. & LONG.	PREC- ISION	LAST SEEN	EO RANK	SCIENTIFIC AND COMMON NAME	ELEMENT TYPE	NY STATUS	US STATUS	HERITAGE RANKS	OFFICE USE	OFFICE USE
SMITHTOWN	CENTRAL ISLIP 405042 731203	M	1959	H	POLYGONUM HYDROPIPEROIDES VAR OPELO OPELOUSA SMARTWEED	VASCULAR PLANT	U		G5 S3		4007372 41
SMITHTOWN	CENTRAL ISLIP 405147 731209	S	1992	AB	SCIRPUS NOVAE-ANGLIAE SALTMARSH BULRUSH	VASCULAR PLANT	E		G5 S1		4007372 82
SMITHTOWN	GREENLAWN 404834 731534	S	1984	X	HEMILEUCA MAIA MAIA COASTAL BARRENS BUCKMOTH	MOTH	U SC		G4T2T3 S2	ESU	4007373 14
SMITHTOWN	GREENLAWN 404921 731627	S	1984	E	TYTO ALBA COMMON BARN-OWL	BIRD	P SC		G5 S3	ESU	4007373 3
SMITHTOWN	GREENLAWN 404918 731633	S	1985	CD	HYPERICUM PROLIFICUM SHRUBBY ST. JOHN'S-WORT	VASCULAR PLANT	T		G5 S2		4007373 13
SMITHTOWN	NORTHPORT 405429 731557	S	1988	E	PANDION HALIAETUS OSPREY	BIRD	T		G5 S4	ESU	4007383 5
SMITHTOWN	NORTHPORT 405309 731547	M	1926	H	DIGITARIA FILIFORMIS SLENDER CRABGRASS	VASCULAR PLANT	R		G5 S2		4007383 3
SMITHTOWN	SAINT JAMES 405509 730954	S	1986	CD	CHARADRIUS MELODUS PIPING PLOVER	BIRD	E	LT	G3 S2B	ESU	4007382 2
SMITHTOWN	SAINT JAMES 405456 731025	S	1988	C	CHARADRIUS MELODUS PIPING PLOVER	BIRD	E	LT	G3 S2B	ESU	4007382 3
SMITHTOWN	SAINT JAMES 405423 731330	S	1995	BC	CHARADRIUS MELODUS PIPING PLOVER	BIRD	E	LT	G3 S2B	ESU	4007382 4
SMITHTOWN	SAINT JAMES 405522 730903	S	1987	C	CHARADRIUS MELODUS PIPING PLOVER	BIRD	E	LT	G3 S2B	ESU	4007382 6



BIOLOGICAL AND CONSERVATION DATA SYSTEM - ELEMENT OCCURRENCE REPORT, 19 AUG 1996  
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* COUNTY & TOWN	USGS TOPO MAP/ LAT. & LONG.	PREC- ISION	LAST SEEN	EO RANK	SCIENTIFIC AND COMMON NAME	ELEMENT TYPE	NY STATUS	US STATUS	HERITAGE RANKS	OFFICE USE	OFFICE	USE
SMITHTOWN	SAINT JAMES 405542 730901	S	1991	F	CHARADRIUS MELODUS PIPING PLOVER	BIRD	E	LT	G3 S2B	ESU	4007382	11
SMITHTOWN	SAINT JAMES 405428 731420	S	1995	E	CHARADRIUS MELODUS PIPING PLOVER	BIRD	E	LT	G3 S2B	ESU	4007382	14
SMITHTOWN	SAINT JAMES 405528 730944	S	1986	X	NYCTANASSA VIOLACEA YELLOW-CROWNED NIGHT-HERON	BIRD	P		G5 S2		4007382	15
SMITHTOWN	SAINT JAMES 405522 730903	S	1987	BC	STERNA ANTILLARUM LEAST TERN	BIRD	E	LENL	G4 S3B	ESU	4007382	6
SMITHTOWN	SAINT JAMES 405509 730954	S	1987	CD	STERNA ANTILLARUM LEAST TERN	BIRD	E	LENL	G4 S3B	ESU	4007382	2
SMITHTOWN	SAINT JAMES 405423 731330	S	1994	B	STERNA ANTILLARUM LEAST TERN	BIRD	E	LENL	G4 S3B	ESU	4007382	4
SMITHTOWN	SAINT JAMES 405456 731025	S	1988	BC	STERNA ANTILLARUM LEAST TERN	BIRD	E	LENL	G4 S3B	ESU	4007382	3
SMITHTOWN	SAINT JAMES 405542 730901	S	1990	F	STERNA ANTILLARUM LEAST TERN	BIRD	E	LENL	G4 S3B	ESU	4007382	11
SMITHTOWN	SAINT JAMES 405513 730915	S	1987	D	STERNA HIRUNDO COMMON TERN	BIRD	T	C2NL	G5 S3B	ESU	4007382	10
SMITHTOWN	SAINT JAMES 405423 731330	S	1984	F	STERNA HIRUNDO COMMON TERN	BIRD	T	C2NL	G5 S3B	ESU	4007382	4
SMITHTOWN	SAINT JAMES 405456 731025	S	1987	D	STERNA HIRUNDO COMMON TERN	BIRD	T	C2NL	G5 S3B	ESU	4007382	3

## BIOLOGICAL AND CONSERVATION DATA SYSTEM - ELEMENT OCCURRENCE REPORT, 19 AUG 1996

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* COUNTY & TOWN	USGS TOPO MAP/ LAT. & LONG.	PREC- LAST ISION SEEN	EO RANK	SCIENTIFIC AND COMMON NAME	ELEMENT TYPE	NY STATUS	US STATUS	HERITAGE RANKS	OFFICE USE	OFFICE USE
SMITHTOWN	SAINT JAMES 405522 730903	S	1988 D	STERNA HIRUNDO COMMON TERM	BIRD	T	C2NL	G5 S3B	ESU	4007382 6

45 Records Processed

## SIGNIFICANT HABITATS

DATE : 08/22/96

REPORT ID#	NAME OF AREA	TYPE OF AREA	COUNTY	TOWN OR CITY	QUADRANGLE	LATITUDE (DEG MIN SEC)	LONGITUDE
SW 52-527	Short Beach; Missequogue River; Sunken Meadow Tern Nesting Area		Suffolk	Smithtown	Saint James	40 53 38	73 12 27

FORM B: SENSITIVE ENVIRONMENTS DATA REQUEST

Site Name: ~~Star~~ Star Sand & Gravel

Work Order No.: 04200-022-081-<sup>0125</sup>~~0125~~-05

Task Manager: Tony Balla Date: 7-5-96

Site Location (city/town, county, state): ~~Hicksville Nassau County NY~~

Latitude: ~~40° 45' 35" N~~ Smithtown, Suffolk City, NY  
40° 52' 17" N

Longitude: ~~73° 30' 20" W~~ 73° 14' 48" W

Name of topo quad on which site is located: Central Islip

Names of all USGS quads containing 4-mile radius and 15-mile surface water pathway:

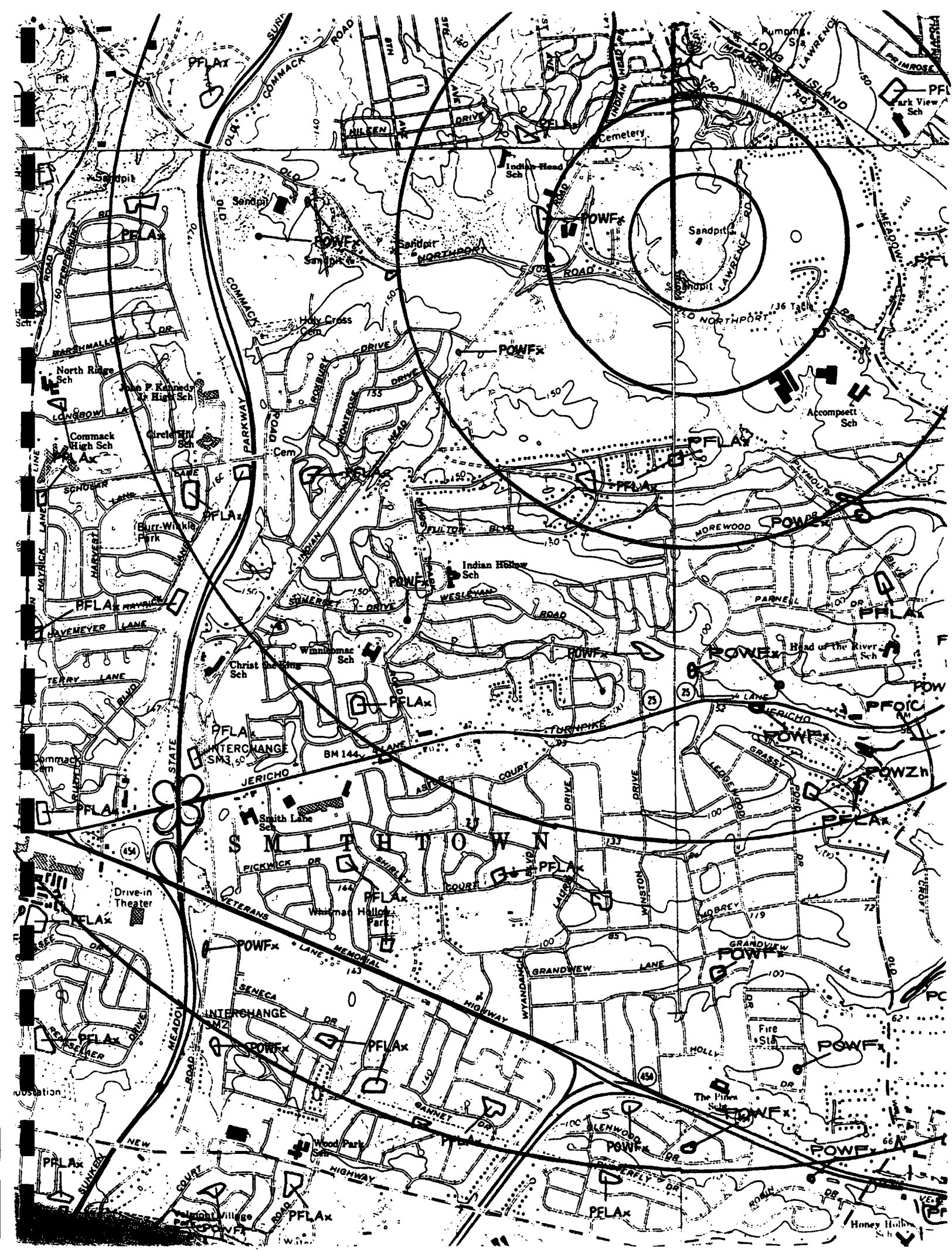
Northport NY	_____
St. James NY	_____
Greenlawn NY	_____
Central Islip NY	_____
_____	_____

List all water bodies that make up the 15-mile surface water pathway:

N/A	_____
_____	_____
_____	_____
_____	_____

Also attach a small 4-mile radius/15-mile surface water pathway map to this form (Use the wetland atlas for NJ).

FORWARD THIS FORM TO RICH SETTINO WHEN COMPLETED.



**FEDERAL STATUS (plants and animals):** The categories of federal status are defined by the United States Department of the Interior as part of the 1973 Endangered Species Act (see Code of Federal Regulations 50 CFR 17). The species listed under this law are enumerated in the Federal Register vol. 50, no. 18 pp. 39526 - 39527.

(blank) = No Federal Endangered Species Act status.

LE = The taxon is formally listed as endangered.

LT = The taxon is formally listed as threatened.

LELT = The taxon is formally listed as endangered in part of its range and threatened in other parts.

PE = The taxon is proposed as endangered.

PT = The taxon is proposed as threatened.

C1 = Candidate, category 1 - There is sufficient information to list the taxon as endangered or threatened.

C2 = Candidate, category 2 - The taxon may be appropriate for listing but more data are needed.

3A = The taxon considered extinct by the U. S. Fish and Wildlife Service (USFWS).

3B = The taxon is no longer considered taxonomically distinct by the USFWS and thus is not appropriate for listing.

3C = The taxon has been shown to be more abundant, widespread, or better protected than previously thought and therefore not in need of official listing.

\* = The taxon is possibly extinct.

\*\* = The taxon is thought to be extinct in the wild but extant in cultivation.

Additional codes:

(C2NL) = Heritage code indicating that the taxon is a candidate in some areas, not listed in other areas.

(ESA) = Heritage code indicating that the taxon is endangered because of similarity of appearance to other endangered species or subspecies.

**FEDERAL STATUS (ecological communities):** At this time there are no federal status categories defined for ecological communities.

**GLOBAL AND STATE RANKS (animals, plants, ecological communities and others):** Each element has a global and state rank as determined by the Natural Heritage Program. These ranks carry no legal weight. The global rank reflects the rarity of the element throughout the world and the state rank reflects the rarity within New York State. Intraspecific taxa are also assigned a taxon rank to reflect the infraspecific taxon's rank throughout the world.

#### GLOBAL RANK:

G1 = Critically imperiled globally because of extreme rarity (5 or fewer occurrences), or very few remaining acres, or miles of stream) or especially vulnerable to extinction because of some factor of its biology.

G2 = Imperiled globally because of rarity (6 - 20 occurrences, or few remaining acres, or miles of stream) or very vulnerable to extinction throughout its range because of other factors.

G3 = Either rare and local throughout its range (21 to 100 occurrences), or found locally (even abundantly at some of its locations) in a restricted range (e.g. physiographic region), or vulnerable to extinction throughout its range because of other factors.

G4 = Apparently secure globally, though it may be quite rare in parts of its range, especially at the periphery.

G5 = Demonstrably secure globally, though it may be quite rare in parts of its range, especially at the periphery.

GH = Historically known, with the expectation that it might be rediscovered.

GX = Species believed to be extinct.

GU = Status unknown.

#### STATE RANK:

S1 = Typically 5 or fewer occurrences, very few remaining individuals, acres, or miles of stream, or some factor of its biology making it especially vulnerable in New York State.

S2 = Typically 6 to 20 occurrences, few remaining individuals, acres, or miles of stream, or factors demonstrably making it very vulnerable in New York State.

S3 = Typically 21 to 100 occurrences, limited acreage, or miles of stream in New York State.

S4 = Apparently secure in New York State.

S5 = Demonstrably secure in New York State.

SH = Historically known from New York State, but not seen in the past 15 years.

SX = Apparently extirpated from New York State.

SA = Accidental or casual in the state.

SE = Exotic, not native to New York State.

SP = Element potentially occurs in the state but there are no occurrences reported.

SR = Reported in the state but without persuasive documentation.

SU = Status unknown.

**TAXON (T) RANK:** The T-ranks (T1 - T5) are defined the same way the Global ranks (G1 - G5) are but the T-rank only refers to the rarity of the subspecies or taxon of the species as a whole.

T1 through T5 = See Global Rank definitions above.

Q = Indicates a question exists whether or not the taxon is a good taxonomic entity.

? = Indicates a question exists about the rank.

**OFFICE USE:** Information for use by the Natural Heritage Program.

**SIGNIFICANT HABITAT DATABASE REPORTS** (Use of this database is slowly being discontinued as the data is integrated into Heritage databases)

**REPORT ID:** Significant habitat file code.

**NAME OF AREA:** Site name where the significant habitat is located.

**TYPE OF AREA:** Type of significant habitat.

**COUNTY/TOWN OR CITY:** County and town where the significant habitat is located.

**QUADRANGLE:** Name of the USGS 7.5 minute topographic map where the significant habitat is located.

**LATITUDE:** Latitude coordinate (degrees, minutes, seconds) for the location of the significant habitat.

**LONGITUDE:** Longitude coordinate for the location of the significant habitat.

**REFERENCE NO. 29**



L O N G I S L A N D S O U N D

NORTHPORT BAY



These two articles present some of the most important and most innovative research in the field of human factors and ergonomics. The first article, by Dr. J. M. Smith, discusses the importance of human factors in the design of complex systems. The second article, by Dr. J. M. Smith, discusses the importance of human factors in the design of complex systems.



U.S. DEPARTMENT OF THE INTERIOR  
FISH AND WILDLIFE SERVICE  
Prepared by Office of Biological Services  
for the National Wetlands Inventory

		<b>FOUR-MILE VICINITY WETLAND MAP</b>	
<b>SITE NAME:</b> <b>STAR SAND AND GRAVEL CORPORATION</b> <b>SMITHTOWN, NY</b>			
<b>DATE:</b> <b>5 JULY 1996</b>		<b>SCALE:</b> <b>1"=2,000'</b>	
<b>USGS QUAD:</b> <b>CENTRAL ISLIP, N.Y</b>			



**REFERENCE NO. 30**

# FROST ASSOCIATES

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P.O. Box 495, Essex, Connecticut 06426  
(860) 767-7644 FAX (860) 767-1971

June 10, 1996

To: Roy F. Weston Inc  
4th Floor Raritan Plaza  
Edison, New Jersey 08837-3616

Attn: Jan Holderness

Fr: Frost Associates  
P.O. Box 495  
Essex, Conn 06426

Tel: (203) 767-1254  
Fax: (203) 767-7069

Sub: Star Sand & Gravel Corp  
Smithtown, NY

CERCLIS: NYD981186935

Job: 04200-022-081-0135-02

Site Longitude: 73-14-48 73.246674  
Site Latitude : 40-52-17 40.871391

The CENTRACTS report below identifies the population, households, and private water wells of each Block Group that lies within, or partially within, the 4, 3, 2, 1, .5, and .25, mile "rings" of the latitude and longitude coordinates above. CENTRACTS may have up to ten radii of any length. 1000 block groups, and 15000 block group sides.

CENTRACTS uses the 1990 Block Group population and Block Group house count data found in the Census Bureau's 1990 STF-1A files. The sources of water supply data are from the Bureau's 1990 STF-3A files. The boundary line coordinates of the Block Groups were extracted from the Census Bureau's 1990 TIGER/Line Files.

CENTRACTS reports are created with programs written by Frost Associates, P.O. Box 495, Essex, Conn. The code was written using Microsoft's Quick-Basic Ver. 4.5.

Latitude and Longitude coordinates identifying a site are entered in degrees and decimal degrees. One or more county files holding Block Group boundary lines are selected for use by CENTRACTS by determining whether the site coordinates fall within the minimum and maximum Lat\Lon coordinates of each county in the state.

Each Block Group line segment has Lat\Lon coordinates representing the "From" and "To" ends of that line. All coordinates from the selected county files are read and converted from degrees, decimal degrees to X\Y miles from the site location. Each line segment is then examined whether it lies within or partially within the maximum ring from the site.

The unique Block Group ID numbers of each line segment that lie within the maximum ring are retained. All Block Group boundary lines matching the Block Group numbers are then extracted from the respective county files to obtain all sides of the included Block Groups. Boundary records are then sorted in adjacent side order to determine the shape and area of each Block Group polygon.

A method to solve for the area of a polygon is to take one-half the sum of the products obtained by multiplying each X-coordinate by the difference between the adjacent Y-coordinates. For a polygon with coordinates at adjacent angles A, B, C, D, and E. The formula can be expressed:

$$\text{Area} = 1/2 \{ X_a(Y_e - Y_b) + X_b(Y_a - Y_c) + X_c(Y_b - Y_d) + X_d(Y_c - Y_e) + X_e(Y_d - Y_a) \}$$

For each ring, the selected Block Groups will be inside, outside, or intersected by the ring. When a polygon is intersected, the partial Block Group area within that ring is calculated using the method described below.

When a ring intersects a Block Group, the intersect points are solved and plotted at the points where the ring enters and exits the shape. The chord line, a line within the circle connecting the intersect points is determined. This chord line is used to calculate the segment area, the half moon shape between the chord line and the ring, and the sub-polygon created by the chord line and the Block Group boundaries that lie outside the ring.

The segment area is subtracted from the sub-polygon area to determine the area of the sub-polygon outside the ring. The area outside the ring is then subtracted from the area of the entire polygon to arrive at the inside area. This inside area is then divided by the tract's total area to determine the percentage of area within the ring. This process is repeated for each block group that is intersected by one of the rings. The total area, partial area, and percentage of partial area of those block groups within, or partially within a ring, are held in memory for the report.

On occasion, the algorithm described above is unable to determine the area of the partial area. Within the report program is a "Paint" routine which allows an enclosed shape to be highlighted. Another routine calculates the percentage of highlighted screen pixels to the pixels within the polygon. A manual entry is allowed. Both the "paint" method and manual entry method over ride the calculated method.

CENTRACTS lists, starting on page 4, all Block Groups in State, County, Census Tract, and Block Group ID order that lie within, or partially within, the maximum ring. Each Block Group is identified by a City or Town name and by the Block Group's State, County, Tract and Block Group ID number. Following is the Block Group's 1990 population and house count extracted from the Census Bureau's 1990 STF-1A files.

The next four columns display water source data from the 1990 STF-3A files. The first column is "Units with Public system or private company source of water", followed by "Units with individual well, Drilled, source of water"; "Units with individual well, Dug, source of water" and "Units with Other source of water".

For each ring, CENTRACTS then shows the Block Groups that are within that ring, the Block Group's total area in square miles, the partial area of the Block Group within that ring, and the partial percentage within the ring. The areas of the included Block Group and the partial areas are then totaled.

The last section tallies the demographic data within each ring. The percentage of area for each Block Group is multiplied times the census data for that Block Group and totaled for all Block Group's within the ring. Ring totals are then determined by subtracting the three mile data from the four mile, the two mile from the three mile, one from the two, etc... Population on private wells is calculated using the formula:  $((\text{Drilled} + \text{Dug Wells}) / \text{Households}) * \text{Population}$

Star Sand & Gravel Corp  
Smithtown, NY

No.	City	Block Group ID	Blk Grp People	House Holds	Public Water	Drilled Wells	Dug Wells	Other
1	Huntington	36103 1107	9 148	11	1	0	0	0
2	Smithtown	36103 1348	1 241	96	37	29	30	0
3	Smithtown	36103 1348	9 1832	78	78	0	0	0
4	Huntington	36103 1108023	3066	1083	1013	13	71	0
5	Huntington	36103 1108024	1311	418	401	0	6	0
6	Huntington	36103 1116021	1826	639	643	0	0	0
7	Huntington	36103 1116022	1395	478	481	0	0	0
8	Huntington	36103 1117011	817	309	318	0	8	0
9	Huntington	36103 1117012	1084	405	422	0	0	0
10	Huntington	36103 1117031	951	277	265	0	0	0
11	Huntington	36103 1117033	671	238	239	0	0	0
12	Huntington	36103 1117034	1475	472	483	0	0	0
13	Huntington	36103 1117041	1047	313	318	0	0	0
14	Huntington	36103 1117042	1554	521	515	0	0	0
15	Huntington	36103 1117043	691	261	262	0	0	0
16	Huntington	36103 1118011	1391	429	451	0	0	0
17	Huntington	36103 1118012	1571	479	472	0	0	0
18	Huntington	36103 1118013	2462	768	746	0	19	0
19	Huntington	36103 1118021	1360	431	429	0	5	0
20	Huntington	36103 1118022	1135	344	337	0	6	0
21	Huntington	36103 1118023	438	145	143	0	0	0
22	Huntington	36103 1118031	1607	493	482	0	0	0
23	Huntington	36103 1118032	1166	362	375	0	0	0
24	Huntington	36103 1118041	2200	682	670	0	10	0
25	Huntington	36103 1121031	1865	590	584	0	0	0
26	Huntington	36103 1121032	1056	335	344	0	0	0
27	Huntington	36103 1121033	1374	344	342	0	0	0
28	Huntington	36103 1121039	9	5	4	0	0	0
29	Smithtown	36103 1347021	2137	799	780	0	0	0
30	Smithtown	36103 1347022	3127	1289	1299	0	0	0
31	Smithtown	36103 1347029	307	91	87	0	13	0
32	Smithtown	36103 1347032	1167	343	298	0	50	0
33	Smithtown	36103 1347033	1045	345	297	0	37	0
34	Smithtown	36103 1347034	651	244	182	12	46	0
35	Smithtown	36103 1347039	711	242	225	0	27	0
36	Smithtown	36103 1347041	2385	855	855	0	0	0
37	Smithtown	36103 1347049	203	3	3	0	0	0
38	Smithtown	36103 1349021	1221	379	369	0	10	0
39	Smithtown	36103 1349022	3526	1076	910	17	149	0
40	Smithtown	36103 1349031	815	244	206	0	0	0
41	Smithtown	36103 1349039	497	162	133	15	20	0
42	Smithtown	36103 1349041	829	250	222	0	13	0
43	Smithtown	36103 1349042	1277	492	487	7	6	0
44	Smithtown	36103 1349043	1485	572	595	0	38	0
45	Smithtown	36103 1349044	1669	538	527	2	9	0
46	Smithtown	36103 1349049	615	190	152	0	54	0
47	Smithtown	36103 1349051	1328	488	521	0	0	0
48	Smithtown	36103 1349052	1966	581	556	0	0	0
49	Smithtown	36103 1349054	659	181	170	0	0	6
50	Smithtown	36103 1349059	59	29	6	0	20	0
51	Smithtown	36103 1349062	979	323	316	0	7	0
52	Smithtown	36103 1349063	1253	399	359	6	0	0
53	Smithtown	36103 1349064	3215	1199	1164	9	0	22
54	Smithtown	36103 1349069	79	27	26	0	0	0
55	Smithtown	36103 1350022	1970	686	697	0	6	0

Star Sand & Gravel Corp  
Smithtown, NY

56	Smithtown	36103	1350023	934	293	262	5	0	0
57	Smithtown	36103	1350024	1722	534	533	6	0	0
58	Smithtown	36103	1350041	1620	576	22	33	521	0
59	Smithtown	36103	1350042	709	231	132	11	85	0
60	Smithtown	36103	1351011	2288	705	679	0	0	0
61	Smithtown	36103	1351012	1432	479	505	0	0	0
62	Smithtown	36103	1351019	152	48	48	0	0	0
63	Smithtown	36103	1351021	1411	442	424	0	0	0
64	Smithtown	36103	1351022	2026	698	705	0	6	5
65	Smithtown	36103	1351029	705	205	205	0	0	0
66	Smithtown	36103	1351031	1851	566	553	7	0	7
67	Smithtown	36103	1351039	3456	967	966	0	0	0
68	Smithtown	36103	1351041	2625	798	782	0	7	0
69	Smithtown	36103	1351042	1833	547	559	0	0	0
70	Smithtown	36103	1351049	296	91	88	0	0	0
71	Smithtown	36103	1352011	2177	688	705	0	0	0
72	Smithtown	36103	1352021	1910	621	632	0	0	0
73	Smithtown	36103	1352022	2730	883	863	5	0	0
74	Smithtown	36103	1352041	2686	799	750	0	34	0
75	Smithtown	36103	1352042	891	268	228	0	8	0
76	Smithtown	36103	1352043	1095	314	352	0	9	0
77	Smithtown	36103	1352052	914	281	294	0	6	0
78	Smithtown	36103	1352053	1666	514	496	0	0	0
79	Smithtown	36103	1352054	2042	772	753	0	12	0
80	Smithtown	36103	1352061	1543	592	593	0	0	0
81	Smithtown	36103	1352062	0	0	0	0	0	0
82	Smithtown	36103	1352065	433	131	117	0	0	0
83	Smithtown	36103	1352069	0	0	0	0	0	0
84	Smithtown	36103	1353011	1422	436	421	0	0	0
85	Smithtown	36103	1353012	686	233	214	0	0	0
86	Smithtown	36103	1353019	1321	436	453	0	17	0
87	Smithtown	36103	1353031	1234	424	400	9	23	0
88	Smithtown	36103	1353033	2719	908	882	0	18	0
89	Smithtown	36103	1353042	3287	1104	1077	0	27	0
90	Smithtown	36103	1354019	162	73	65	0	21	0
91	Islip	36103	1457011	1324	393	372	5	0	0
92	Islip	36103	1457014	459	139	146	0	0	0
93	Islip	36103	1457019	944	258	241	0	5	6
94	Islip	36103	1458033	1238	397	392	0	0	0
=====				=====	=====	=====	=====	=====	=====
Totals:				126861	40877	39206	191	1459	46

Star Sand & Gravel Corp  
Smithtown, NY

City	Census Tract ID	Tract People	House Count	Public Water	Drilled Wells	Dug Wells	Other Sources
Huntington	36103 1107 9	148	11	1	0	0	0
Huntington	36103 1121031	1865	590	584	0	0	0
Huntington	36103 1121032	1056	335	344	0	0	0
Huntington	36103 1108023	3066	1083	1013	13	71	0
Huntington	36103 1108024	1311	418	401	0	6	0
Huntington	36103 1116021	1826	639	643	0	0	0
Huntington	36103 1116022	1395	478	481	0	0	0
Huntington	36103 1117011	817	309	318	0	8	0
Huntington	36103 1117012	1084	405	422	0	0	0
Huntington	36103 1117031	951	277	265	0	0	0
Huntington	36103 1117033	671	238	239	0	0	0
Huntington	36103 1117034	1475	472	483	0	0	0
Huntington	36103 1117041	1047	313	318	0	0	0
Huntington	36103 1117042	1554	521	515	0	0	0
Huntington	36103 1117043	691	261	262	0	0	0
Huntington	36103 1118011	1391	429	451	0	0	0
Huntington	36103 1118012	1571	479	472	0	0	0
Huntington	36103 1118013	2462	768	746	0	19	0
Huntington	36103 1118021	1360	431	429	0	5	0
Huntington	36103 1118022	1135	344	337	0	6	0
Huntington	36103 1118023	438	145	143	0	0	0
Huntington	36103 1118031	1607	493	482	0	0	0
Huntington	36103 1118032	1166	362	375	0	0	0
Huntington	36103 1118041	2200	682	670	0	10	0
Huntington	36103 1121033	1374	344	342	0	0	0
Huntington	36103 1121039	9	5	4	0	0	0
Sub Totals:		33670	10832	10740	13	125	0
Islip	36103 1458033	1238	397	392	0	0	0
Islip	36103 1457019	944	258	241	0	5	6
Islip	36103 1457014	459	139	146	0	0	0
Islip	36103 1457011	1324	393	372	5	0	0
Sub Totals:		3965	1187	1151	5	5	6
Smithtown	36103 1348 9	1832	78	78	0	0	0
Smithtown	36103 1347032	1167	343	298	0	50	0
Smithtown	36103 1347029	307	91	87	0	13	0
Smithtown	36103 1347021	2137	799	780	0	0	0
Smithtown	36103 1347022	3127	1289	1299	0	0	0
Smithtown	36103 1348 1	241	96	37	29	30	0
Smithtown	36103 1347049	203	3	3	0	0	0
Smithtown	36103 1349021	1221	379	369	0	10	0
Smithtown	36103 1349022	3526	1076	910	17	149	0
Smithtown	36103 1349031	815	244	206	0	0	0
Smithtown	36103 1349039	497	162	133	15	20	0
Smithtown	36103 1349041	829	250	222	0	13	0
Smithtown	36103 1349042	1277	492	487	7	6	0
Smithtown	36103 1347033	1045	345	297	0	37	0
Smithtown	36103 1347034	651	244	182	12	46	0
Smithtown	36103 1347039	711	242	225	0	27	0
Smithtown	36103 1347041	2385	855	855	0	0	0
Smithtown	36103 1349052	1966	581	556	0	0	0
Smithtown	36103 1349054	659	181	170	0	0	6
Smithtown	36103 1349059	59	29	6	0	20	0

Star Sand & Gravel Corp  
Smithtown, NY

Smithtown	36103	1349062	979	323	316	0	7	0
Smithtown	36103	1349063	1253	399	359	6	0	0
Smithtown	36103	1349064	3215	1199	1164	9	0	22
Smithtown	36103	1349069	79	27	26	0	0	0
Smithtown	36103	1350022	1970	686	697	0	6	0
Smithtown	36103	1350023	934	293	262	5	0	0
Smithtown	36103	1350024	1722	534	533	6	0	0
Smithtown	36103	1350041	1620	576	22	33	521	0
Smithtown	36103	1350042	709	231	132	11	85	0
Smithtown	36103	1351011	2288	705	679	0	0	0
Smithtown	36103	1351012	1432	479	505	0	0	0
Smithtown	36103	1351019	152	48	48	0	0	0
Smithtown	36103	1351021	1411	442	424	0	0	0
Smithtown	36103	1351022	2026	698	705	0	6	5
Smithtown	36103	1351029	705	205	205	0	0	0
Smithtown	36103	1351031	1851	566	553	7	0	7
Smithtown	36103	1351039	3456	967	966	0	0	0
Smithtown	36103	1351041	2625	798	782	0	7	0
Smithtown	36103	1351042	1833	547	559	0	0	0
Smithtown	36103	1351049	296	91	88	0	0	0
Smithtown	36103	1352011	2177	688	705	0	0	0
Smithtown	36103	1352021	1910	621	632	0	0	0
Smithtown	36103	1352022	2730	883	863	5	0	0
Smithtown	36103	1352041	2686	799	750	0	34	0
Smithtown	36103	1352042	891	268	228	0	8	0
Smithtown	36103	1352043	1095	314	352	0	9	0
Smithtown	36103	1352052	914	281	294	0	6	0
Smithtown	36103	1352053	1666	514	496	0	0	0
Smithtown	36103	1352054	2042	772	753	0	12	0
Smithtown	36103	1352061	1543	592	593	0	0	0
Smithtown	36103	1352062	0	0	0	0	0	0
Smithtown	36103	1352065	433	131	117	0	0	0
Smithtown	36103	1352069	0	0	0	0	0	0
Smithtown	36103	1353011	1422	436	421	0	0	0
Smithtown	36103	1353012	686	233	214	0	0	0
Smithtown	36103	1353019	1321	436	453	0	17	0
Smithtown	36103	1353031	1234	424	400	9	23	0
Smithtown	36103	1353033	2719	908	882	0	18	0
Smithtown	36103	1353042	3287	1104	1077	0	27	0
Smithtown	36103	1354019	162	73	65	0	21	0
Smithtown	36103	1349043	1485	572	595	0	38	0
Smithtown	36103	1349044	1669	538	527	2	9	0
Smithtown	36103	1349049	615	190	152	0	54	0
Smithtown	36103	1349051	1328	488	521	0	0	0
Sub Totals:			89226	28858	27315	173	1329	40

Star Sand & Gravel Corp  
Smithtown, NY

For Radius of 4 Mi., Circle Area = 50.265482

No.	City	Block Group ID	Total Area	Partial Area	% Within Radius
1	Huntington	36103 11079	0.207466	0.172814	83.30
2	Smithtown	36103 13481	0.273510	0.273510	100.00
3	Smithtown	36103 13489	0.624941	0.624941	100.00
4	Huntington	36103 1108023	3.057050	0.453271	14.83
5	Huntington	36103 1108024	1.375468	1.375468	100.00
6	Huntington	36103 1116021	0.445640	0.085444	19.17
7	Huntington	36103 1116022	0.248168	0.154039	62.07
8	Huntington	36103 1117011	0.153768	0.000973	0.63
9	Huntington	36103 1117012	0.147972	0.042243	28.55
10	Huntington	36103 1117031	0.424625	0.424625	100.00
11	Huntington	36103 1117033	0.219657	0.194553	88.57
12	Huntington	36103 1117034	0.369219	0.360181	97.55
13	Huntington	36103 1117041	0.323970	0.323970	100.00
14	Huntington	36103 1117042	0.339704	0.339704	100.00
15	Huntington	36103 1117043	0.127610	0.127610	100.00
16	Huntington	36103 1118011	0.420815	0.077082	18.32
17	Huntington	36103 1118012	0.440035	0.061969	14.08
18	Huntington	36103 1118013	0.587441	0.027322	4.65
19	Huntington	36103 1118021	0.395730	0.395730	100.00
20	Huntington	36103 1118022	0.334499	0.334499	100.00
21	Huntington	36103 1118023	0.167268	0.167268	100.00
22	Huntington	36103 1118031	0.457287	0.457287	100.00
23	Huntington	36103 1118032	0.333647	0.333647	100.00
24	Huntington	36103 1118041	0.721098	0.716884	99.42
25	Huntington	36103 1121031	0.371871	0.296198	79.65
26	Huntington	36103 1121032	0.178021	0.178021	100.00
27	Huntington	36103 1121033	0.413009	0.241100	58.38
28	Huntington	36103 1121039	0.269941	0.043869	16.25
29	Smithtown	36103 1347021	0.545667	0.545667	100.00
30	Smithtown	36103 1347022	0.947902	0.947902	100.00
31	Islip	36103 1458033	0.672455	0.115175	17.13
32	Smithtown	36103 1347032	0.959487	0.959487	100.00
33	Smithtown	36103 1347033	0.857568	0.857568	100.00
34	Smithtown	36103 1347034	0.519470	0.342418	65.92
35	Smithtown	36103 1347039	3.857051	3.320594	86.09
36	Smithtown	36103 1347041	0.688373	0.688373	100.00
37	Smithtown	36103 1347049	0.751232	0.751232	100.00
38	Smithtown	36103 1349021	0.355083	0.355083	100.00
39	Smithtown	36103 1349022	2.108600	2.108600	100.00
40	Smithtown	36103 1349031	0.256037	0.256037	100.00
41	Smithtown	36103 1349039	1.053957	1.053957	100.00
42	Smithtown	36103 1349041	0.366552	0.366552	100.00
43	Smithtown	36103 1349042	0.279273	0.279273	100.00
44	Smithtown	36103 1349043	0.941492	0.941492	100.00
45	Smithtown	36103 1349044	0.949355	0.949355	100.00
46	Smithtown	36103 1349049	0.567483	0.567483	100.00
47	Smithtown	36103 1349051	0.293537	0.293537	100.00
48	Smithtown	36103 1349052	0.359797	0.359797	100.00
49	Smithtown	36103 1349054	0.096480	0.096480	100.00
50	Smithtown	36103 1349059	0.363740	0.363740	100.00
51	Smithtown	36103 1349062	0.165899	0.165899	100.00
52	Smithtown	36103 1349063	0.216014	0.216014	100.00
53	Smithtown	36103 1349064	0.728748	0.728748	100.00



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54	Smithtown	36103 1349069	0.131995	0.131995	100.00
55	Smithtown	36103 1350022	0.772056	0.047006	6.09
56	Smithtown	36103 1350023	0.205835	0.066000	32.06
57	Smithtown	36103 1350024	0.367158	0.195891	53.35
58	Smithtown	36103 1350041	7.978547	4.321937	54.17
59	Smithtown	36103 1350042	1.117491	0.518617	46.41
60	Smithtown	36103 1351011	0.948747	0.948747	100.00
61	Smithtown	36103 1351012	0.289308	0.289308	100.00
62	Smithtown	36103 1351019	0.159292	0.159292	100.00
63	Smithtown	36103 1351021	0.284169	0.284169	100.00
64	Smithtown	36103 1351022	0.399382	0.399382	100.00
65	Smithtown	36103 1351029	0.721271	0.721271	100.00
66	Smithtown	36103 1351031	0.417109	0.417109	100.00
67	Smithtown	36103 1351039	0.985454	0.985454	100.00
68	Smithtown	36103 1351041	1.274791	1.274791	100.00
69	Smithtown	36103 1351042	0.351891	0.351891	100.00
70	Smithtown	36103 1351049	0.536372	0.536372	100.00
71	Smithtown	36103 1352011	0.542045	0.542045	100.00
72	Smithtown	36103 1352021	0.590572	0.590572	100.00
73	Smithtown	36103 1352022	0.718219	0.718219	100.00
74	Smithtown	36103 1352041	1.105410	1.105410	100.00
75	Smithtown	36103 1352042	0.330566	0.330566	100.00
76	Smithtown	36103 1352043	0.321255	0.321255	100.00
77	Smithtown	36103 1352052	0.805815	0.018408	2.28
78	Smithtown	36103 1352053	0.659700	0.577924	87.60
79	Smithtown	36103 1352054	0.724234	0.647551	89.41
80	Smithtown	36103 1352061	0.331236	0.307671	92.89
81	Smithtown	36103 1352062	0.654105	0.429168	65.61
82	Smithtown	36103 1352065	0.928411	0.709769	76.45
83	Smithtown	36103 1352069	0.300148	0.079419	26.46
84	Smithtown	36103 1353011	0.338929	0.202194	59.66
85	Smithtown	36103 1353012	0.322301	0.322301	100.00
86	Smithtown	36103 1353019	1.618125	1.618125	100.00
87	Smithtown	36103 1353031	0.432237	0.243894	56.43
88	Smithtown	36103 1353033	0.751330	0.751330	100.00
89	Smithtown	36103 1353042	0.873784	0.026036	2.98
90	Smithtown	36103 1354019	0.554812	0.021333	3.85
91	Islip	36103 1457011	0.758875	0.078868	10.39
92	Islip	36103 1457014	0.151744	0.125244	82.54
93	Islip	36103 1457019	1.318465	0.383440	29.08
94	Smithtown	36103 1347029	0.441197	0.441197	100.00
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Totals:			64.845078	48.155861	

For Radius of 3 Mi., Circle Area = 28.274334

No.	City	Block Group ID	Total Area	Partial Area	% Within Radius
2	Smithtown	36103 13481	0.273510	0.273510	100.00
3	Smithtown	36103 13489	0.624941	0.624941	100.00
5	Huntington	36103 1108024	1.375468	0.408310	29.69
10	Huntington	36103 1117031	0.424625	0.424625	100.00
12	Huntington	36103 1117034	0.369219	0.076788	20.80
13	Huntington	36103 1117041	0.323970	0.275192	84.94
19	Huntington	36103 1118021	0.395730	0.070811	17.89
20	Huntington	36103 1118022	0.334499	0.330065	98.67
22	Huntington	36103 1118031	0.457287	0.286520	62.66
24	Huntington	36103 1118041	0.721098	0.120903	16.77

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29	Smithtown	36103 1347021	0.545667	0.545667	100.00
30	Smithtown	36103 1347022	0.947902	0.947902	100.00
32	Smithtown	36103 1347032	0.959487	0.951050	99.12
33	Smithtown	36103 1347033	0.857568	0.275566	32.13
35	Smithtown	36103 1347039	3.857051	1.921226	49.81
36	Smithtown	36103 1347041	0.688373	0.688373	100.00
37	Smithtown	36103 1347049	0.751232	0.751232	100.00
38	Smithtown	36103 1349021	0.355083	0.355083	100.00
39	Smithtown	36103 1349022	2.108600	2.108600	100.00
40	Smithtown	36103 1349031	0.256037	0.256037	100.00
41	Smithtown	36103 1349039	1.053957	1.053957	100.00
43	Smithtown	36103 1349042	0.279273	0.259007	92.74
44	Smithtown	36103 1349043	0.941492	0.853897	90.70
45	Smithtown	36103 1349044	0.949355	0.005840	0.62
46	Smithtown	36103 1349049	0.567483	0.041508	7.31
47	Smithtown	36103 1349051	0.293537	0.293537	100.00
48	Smithtown	36103 1349052	0.359797	0.359797	100.00
49	Smithtown	36103 1349054	0.096480	0.096480	100.00
50	Smithtown	36103 1349059	0.363740	0.363740	100.00
51	Smithtown	36103 1349062	0.165899	0.165899	100.00
52	Smithtown	36103 1349063	0.216014	0.216014	100.00
53	Smithtown	36103 1349064	0.728748	0.728748	100.00
54	Smithtown	36103 1349069	0.131995	0.131995	100.00
58	Smithtown	36103 1350041	7.978547	1.373455	17.21
60	Smithtown	36103 1351011	0.948747	0.948747	100.00
61	Smithtown	36103 1351012	0.289308	0.288325	99.66
62	Smithtown	36103 1351019	0.159292	0.159292	100.00
63	Smithtown	36103 1351021	0.284169	0.284169	100.00
64	Smithtown	36103 1351022	0.399382	0.399382	100.00
65	Smithtown	36103 1351029	0.721271	0.721271	100.00
66	Smithtown	36103 1351031	0.417109	0.417109	100.00
67	Smithtown	36103 1351039	0.985454	0.985454	100.00
68	Smithtown	36103 1351041	1.274791	1.274791	100.00
69	Smithtown	36103 1351042	0.351891	0.351891	100.00
70	Smithtown	36103 1351049	0.536372	0.536372	100.00
71	Smithtown	36103 1352011	0.542045	0.542045	100.00
72	Smithtown	36103 1352021	0.590572	0.172681	29.24
73	Smithtown	36103 1352022	0.718219	0.288566	40.18
74	Smithtown	36103 1352041	1.105410	1.055045	95.44
75	Smithtown	36103 1352042	0.330566	0.330566	100.00
76	Smithtown	36103 1352043	0.321255	0.321255	100.00
79	Smithtown	36103 1352054	0.724234	0.121275	16.75
86	Smithtown	36103 1353019	1.618125	0.880416	54.41
88	Smithtown	36103 1353033	0.751330	0.098038	13.05
94	Smithtown	36103 1347029	0.441197	0.441197	100.00
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Totals:			44.264408	28.254166	

For Radius of 2 Mi., Circle Area = 12.566371

No.	City	Block Group ID	Total Area	Partial Area	% Within Radius
2	Smithtown	36103 13481	0.273510	0.110157	40.28
3	Smithtown	36103 13489	0.624941	0.623493	99.77
29	Smithtown	36103 1347021	0.545667	0.545667	100.00
30	Smithtown	36103 1347022	0.947902	0.947902	100.00
32	Smithtown	36103 1347032	0.959487	0.205300	21.40
35	Smithtown	36103 1347039	3.857051	0.183059	4.75

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36	Smithtown	36103 1347041	0.688373	0.534190	77.60
37	Smithtown	36103 1347049	0.751232	0.198427	26.41
38	Smithtown	36103 1349021	0.355083	0.335500	94.49
39	Smithtown	36103 1349022	2.108600	0.726310	34.45
41	Smithtown	36103 1349039	1.053957	0.312252	29.63
47	Smithtown	36103 1349051	0.293537	0.103713	35.33
48	Smithtown	36103 1349052	0.359797	0.359797	100.00
49	Smithtown	36103 1349054	0.096480	0.096480	100.00
50	Smithtown	36103 1349059	0.363740	0.000010	0.00
51	Smithtown	36103 1349062	0.165899	0.165899	100.00
52	Smithtown	36103 1349063	0.216014	0.216014	100.00
53	Smithtown	36103 1349064	0.728748	0.728695	99.99
54	Smithtown	36103 1349069	0.131995	0.131995	100.00
60	Smithtown	36103 1351011	0.948747	0.394426	41.57
62	Smithtown	36103 1351019	0.159292	0.035649	22.38
63	Smithtown	36103 1351021	0.284169	0.284169	100.00
64	Smithtown	36103 1351022	0.399382	0.202116	50.61
65	Smithtown	36103 1351029	0.721271	0.632837	87.74
66	Smithtown	36103 1351031	0.417109	0.416985	99.97
67	Smithtown	36103 1351039	0.985454	0.985454	100.00
68	Smithtown	36103 1351041	1.274791	1.274791	100.00
69	Smithtown	36103 1351042	0.351891	0.351891	100.00
70	Smithtown	36103 1351049	0.536372	0.536372	100.00
71	Smithtown	36103 1352011	0.542045	0.048291	8.91
74	Smithtown	36103 1352041	1.105410	0.330050	29.86
75	Smithtown	36103 1352042	0.330566	0.079212	23.96
76	Smithtown	36103 1352043	0.321255	0.017206	5.36
94	Smithtown	36103 1347029	0.441197	0.441197	100.00
Totals:			23.340963	12.555507	

For Radius of 1 Mi., Circle Area = 3.141593

No.	City	Block Group ID	Total Area	Partial Area	% Within Radius
3	Smithtown	36103 13489	0.624941	0.074702	11.95
29	Smithtown	36103 1347021	0.545667	0.094702	17.36
30	Smithtown	36103 1347022	0.947902	0.433425	45.72
36	Smithtown	36103 1347041	0.688373	0.001275	0.19
48	Smithtown	36103 1349052	0.359797	0.010899	3.03
53	Smithtown	36103 1349064	0.728748	0.384388	52.75
54	Smithtown	36103 1349069	0.131995	0.131995	100.00
63	Smithtown	36103 1351021	0.284169	0.002184	0.77
65	Smithtown	36103 1351029	0.721271	0.079394	11.01
67	Smithtown	36103 1351039	0.985454	0.551169	55.93
68	Smithtown	36103 1351041	1.274791	0.933359	73.22
70	Smithtown	36103 1351049	0.536372	0.002904	0.54
94	Smithtown	36103 1347029	0.441197	0.441197	100.00
Totals:			8.270677	3.141593	

For Radius of .5 Mi., Circle Area = 0.785398

No.	City	Block Group ID	Total Area	Partial Area	% Within Radius
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30	Smithtown	36103 1347022	0.947902	0.009633	1.02
67	Smithtown	36103 1351039	0.985454	0.054702	5.55
68	Smithtown	36103 1351041	1.274791	0.365098	28.64
94	Smithtown	36103 1347029	0.441197	0.355965	80.68
=====			=====	=====	=====
Totals:			3.649344	0.785398	

For Radius of .25 Mi., Circle Area = 0.196350

No.	City	Block Group ID	Total Area	Partial Area	% Within Radius
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68	Smithtown	36103 1351041	1.274791	0.094682	7.43
94	Smithtown	36103 1347029	0.441197	0.101667	23.04
=====			=====	=====	=====
Totals:			1.715989	0.196350	

=====  
Site Data  
=====

Population: 101038.62  
Households: 32373.78  
Drilled Wells: 140.22  
Dug Wells: 995.92  
Other Water Sources: 41.74

=====  
Partial (RING) data  
=====

----- Within Ring: 4 Mile(s) and 3 Mile(s) -----

Population: 37354.71  
Households: 12208.72  
Drilled Wells: 43.03  
Dug Wells: 451.96  
Other Water Sources: 1.74

\*\* Population On Private Wells: 1514.51

----- Within Ring: 3 Mile(s) and 2 Mile(s) -----

Population: 27496.18  
Households: 8832.68  
Drilled Wells: 53.22  
Dug Wells: 410.60  
Other Water Sources: 2.47

\*\* Population On Private Wells: 1443.88

----- Within Ring: 2 Mile(s) and 1 Mile(s) -----

Population: 28077.33  
Households: 8673.80  
Drilled Wells: 39.23  
Dug Wells: 115.22  
Other Water Sources: 25.92

\*\* Population On Private Wells: 499.96

----- Within Ring: 1 Mile(s) and .5 Mile(s) -----

Population: 6887.28  
Households: 2289.82  
Drilled Wells: 4.75  
Dug Wells: 5.63  
Other Water Sources: 11.60

\*\* Population On Private Wells: 31.22

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----- Within Ring: .5 Mile(s) and .25 Mile(s) -----

Population:	957.40
Households:	288.50
Drilled Wells:	0.00
Dug Wells:	8.98
Other Water Sources:	0.00

\*\* Population On Private Wells: 29.79

----- Within Ring: .25 Mile(s) and 0 Mile(s) -----

Population:	265.71
Households:	80.24
Drilled Wells:	0.00
Dug Wells:	3.52
Other Water Sources:	0.00

\*\* Population On Private Wells: 11.64

\*\* Total Population On Private Wells: 3531.01